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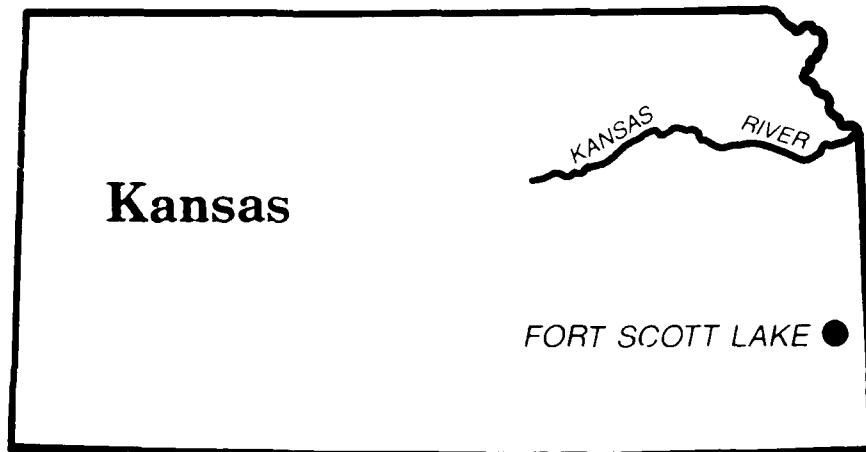
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Fort Scott Lake Cultural Resource Study — Part I

AD-A216 532

Archaeological and Geomorphological Inventory and Evaluation at the Proposed Fort Scott Lake Project, Southeast Kansas

Contract No. DACW41-82-C-0100



Environmental Systems Analysis, Inc. Overland Park, Kansas

By:
Larry J. Schmits, Principal Investigator
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Rolfe Mandel

1989

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ARCHAEOLOGICAL AND GEOMORPHOLOGICAL
INVENTORY AND EVALUATION AT THE
PROPOSED FORT SCOTT LAKE PROJECT,
SOUTHEAST KANSAS

Larry J. Schmits
James A. Donohue
Rolfe Mandel

Submitted to:

U.S. Army Corps of Engineers
Kansas City District

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Environmental Systems Analysis, Inc.
Cultural Resources Division
Overland Park, Kansas

PROJECT NO. ESA-1040

Larry J. Schmits
Principal Investigator

1989

Funds for this investigation and report were provided by the U.S. Army Corps of Engineers. The Corps may not necessarily agree with the contents of this report in its entirety. The report reflects the professional views of the contractor who is responsible for collection of the data, analysis, conclusions and recommendations.

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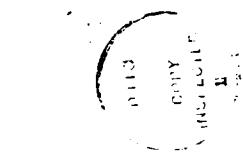
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ABSTRACT

The U.S. Army Corps of Engineers has tentative plans for the construction of Fort Scott Lake in central Bourbon County, southeast Kansas. The project will be located on the Marmaton River drainage west of Fort Scott and will create a 5000 acre lake multipurpose pool and 11,800 acre floodpool lake. The Fort Scott area is located within the Osage Plains physiographic province and a vegetational zone composed of oak-hickory forest and bluestem prairie.

The present investigations were designed to provide for archaeological and geomorphological inventory and evaluation of 10 percent of the project lands. This project had three major goals: (1) construction of a local cultural sequence, (2) delineation of the cultural sequence and alluvial chronology, and (3) reconstruction of settlement-subsistence patterns. These goals were selected to provide data regarding the number and nature of cultural resources in the event that plans for construction of the lake proceed.

The archaeological survey and testing program resulted in the location of 13 new sites and one previously recorded site. These sites principally date to the Plains Woodland period indicating intensive occupation of the Fort Scott area during this period. These Plains Woodland sites appear to be related to Plains Woodland complexes in eastern Kansas such as the Greenwood and Cuesta phases and Late Woodland sites in the Stockton Lake area of southwestern Missouri. Two Archaic sites, two Historic Aboriginal sites and a number of Historic American sites are also present. Geomorphological investigations indicate the presence of two alluvial terraces in the Marmaton. The most recent terrace, the T-0 floodplain, dates to the recent past. The surface of the older T-1 terrace is at least 1000-1500 years of age. The geomorphic data suggests that earlier Archaic occupations are buried in the T-1 terrace.

The available data indicates a Plains Woodland settlement pattern consisting of sites clustering on the T-1 terraces and on low bluffs or slopes overlooking the Marmaton River and its major tributary, Paint Creek. Sites are not located on small tributaries or upland divides. The locational data suggests a hunting and gathering economy focused on riparian, slope forest and aquatic communities rather than upland prairie resources.

Six of the 14 sites investigated (14B0102, 14B0103, 14B0104, 14B0106, 14B0107 and 14B0108) are recommended for nomination to the National Register of Historic Places. Recommendation for mitigation of these sites is made in the event that construction plans for Fort Scott Lake proceed. Six sites are too disturbed to merit National Register Nomination (14B0101, 14B0105, 14B0110, 14B0111, 14B0113 and 14B0114). No further work will be required at these sites. Further work will have to be conducted at 14B0116 and 14B0204 to determine their significance. Recommendations are made for inventory and evaluation of the remaining 90 percent of the project area, backhoe trenching to locate buried

sites, additional geomorphological and paleoecological work and radiocarbon and thermoluminescence dating of existing collections from the project area.

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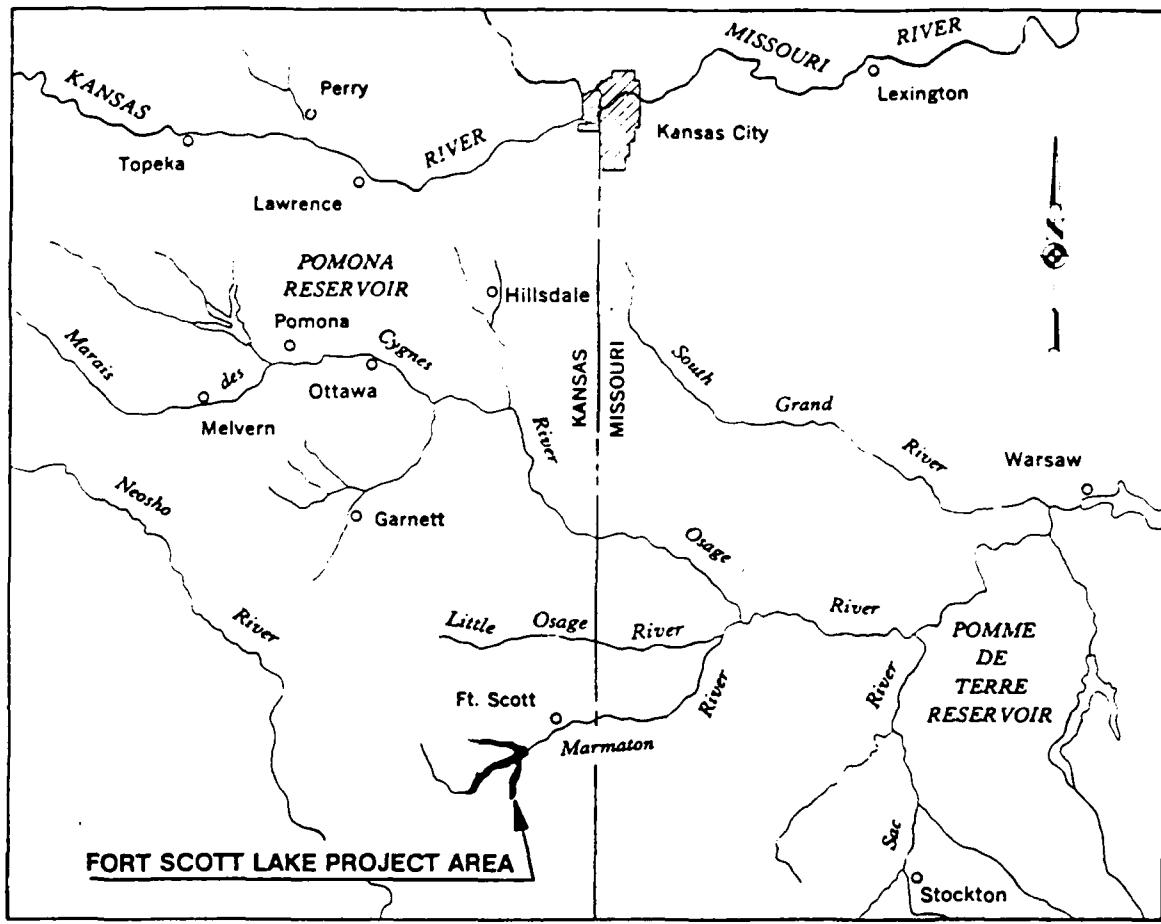
I. INTRODUCTION

The U.S. Army Corps of Engineers, Kansas City District has plans for the construction of Fort Scott Lake located in southeast Kansas (Figure 1). The Fort Scott Lake Project was authorized by the Flood Control Act of 1954 (Public Law 83-780) to control the drainage of the upper Osage River Basin. The project is located on the Marmaton River and its major tributaries, Paint Creek and Pawnee Creek, in central Bourbon County. The project area will consist of 17,700 acres in fee simple land and 290 acres in easement. The dam will be located approximately 7.6 km upstream (southwest) of the City of Fort Scott and will extend west along the Marmaton River to Uniontown and south along Pawnee Creek to just east of Hiattville. If built according to present specifications, the project will create a 5000 acre lake with 97 miles (155 km) of shoreline at multipurpose pool level and will inundate 11,800 acres at full pool.

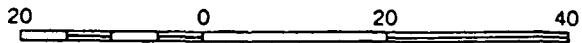
The present investigations result from Contract DACW41-82-C-0011 designed to provide for archaeological survey and site testing and geomorphic investigations in the project area. According to the scope-of-work (Appendix I), these investigations were designed to provide a determination of (1) the number of archaeological sites present; (2) their area and temporal extent; (3) their cultural and scientific importance; (4) their eligibility for the National Register of Historic Places; (5) appropriate mitigative methods for eligible sites; (6) the terrace sequence and a predictive model for buried sites.

This cultural resources study is mandated by the National Historic Preservation Act of 1966 (Public Law 89-665) as amended. Authorization for funding is provided for by the Reservoir Salvage Act of 1960 (Public Law 86-523) as amended by the Archaeological and Historical Data Preservation Act of 1974 (Public Law 93-291).

Following this introduction is a discussion of the project area's environmental setting. Chapter III outlines the cultural history of eastern Kansas. Chapter IV summarizes previous archaeological investigations in the project area and summarizes what is currently known about local cultural history. The research design developed during the course of the project is detailed in Chapter V. Chapter VI details the sites located during the archaeological survey and the results of the testing program. Chapter VII discusses the geomorphological investigations conducted in the project area. The final chapter summarizes the results of the project, develops a predictive model for archaeological site location in the area and discusses recommendations for future management of cultural resources at the proposed Fort Scott Lake project.



LOCATION MAP



SCALE IN MILES

Figure 1. Location of the proposed Fort Scott Lake Project in southeast Kansas.

II. ENVIRONMENTAL SETTING OF THE PROPOSED FORT SCOTT LAKE PROJECT AREA

The Fort Scott Lake project area lies within the alluvial valleys of the Marmaton River, South Fork Marmaton River, and Pawnee Creek (Figure 1). These rivers have meandering channels with low gradients and high sinuosities. In most places, the Marmaton and South Fork Marmaton flow on bedrock. Although bedrock controls of the rivers have not been identified in the project area, erosion resistant cuesta escarpments appear to have influenced the present meander form of the Marmaton River between Uniontown and Fort Scott, Kansas. The entire project area is within the Osage Cuestas of the Central Lowland physiographic province. The Osage Cuestas form a large area lying south of the Kansas River, east of the Flint Hills, and northwest of the Cherokee Plain. This area is characterized by a series of northeast-southwest trending cuestas. The bedrock consists of hard and soft layers of limestone and shale that dip to the northwest. The cuestas are formed by the differential erosion of these alternating beds of hard and soft rock layers. The more resistant limestone strata form the upland east-facing scarps of the cuestas, while the thicker and softer shales have eroded to form the intervening lowlands.

Elevations in the study area range from about 815 ft above sea level on the floodplain near the proposed dam-site of Fort Scott Lake to approximately 1070 ft above sea level on the uplands of the Marmaton River Valley approximately one mile south of Uniontown.

BEDROCK GEOLOGY

The portion of the Marmaton River basin within Kansas encompasses an area of approximately 432 square miles. In the westernmost part of its basin (Allen County), the Marmaton River has dissected Pennsylvanian sedimentaries of the Kansas City Group. These Pennsylvanian rocks consist chiefly of limestone and shale (Parizek 1965). The Marmaton River dissects Pennsylvanian rocks of the Pleasanton Group as it flows out of Allen County and enters Bourbon County. The Pleasanton Group is largely composed of shale but includes some sandstone, limestone and coal (Jewett, Emery and Hatcher 1965). The Marmaton River and its tributaries dissect Pennsylvanian age shales, sandstones and thin limestones within the study area. These sedimentaries form the Marmaton Group, which extends over most of Bourbon County (Jewett 1945).

The consolidated sedimentary rocks in the proposed study area occur as nearly parallel layers which slope gently toward the north and west. The dip of the rocks along a generally northwest-southeast cross-section averages about ten to 25 ft per mile. Regionally, the consolidated rocks form a gentle slope to the northwest dipping approximately one-half degree or less. Faulting in the study area is not extensive and the known faults have relatively small displacement. Rock outcrops are

common and many of the upland surfaces are composed of bedrock covered with a thin soil mantle.

Although no similar study has been conducted for the Marmaton River, Feagins (1979:48) has identified three settings in Bourbon County's Little Osage River Valley in which chert--an important prehistoric and early historic period raw material--is found. These settings are limestone outcroppings, cherty soils and stream beds. It is probable that similar settings occur along the Marmaton River. In addition to these local and relatively low quality sources, chert is also found in the Ozark Plateau to the east and the Flint Hills to the west (Feagins 1979).

SOILS

The soils in the Fort Scott Lake project area can be divided into four major associations on the basis of the landscapes on which the soils are developing: upland divides, footslopes of upland divides, alluvial terraces and floodplains. The upland soils are residual soils, for the most part, developing from the underlying bedrock. Eolian silts and clays occur on some of the broad upland divides. These deposits generally are less than two feet thick. As a result, determining their effect on the soils in the project area is difficult. In some locations a thin eolian deposit is at the surface of the Parsons soil.

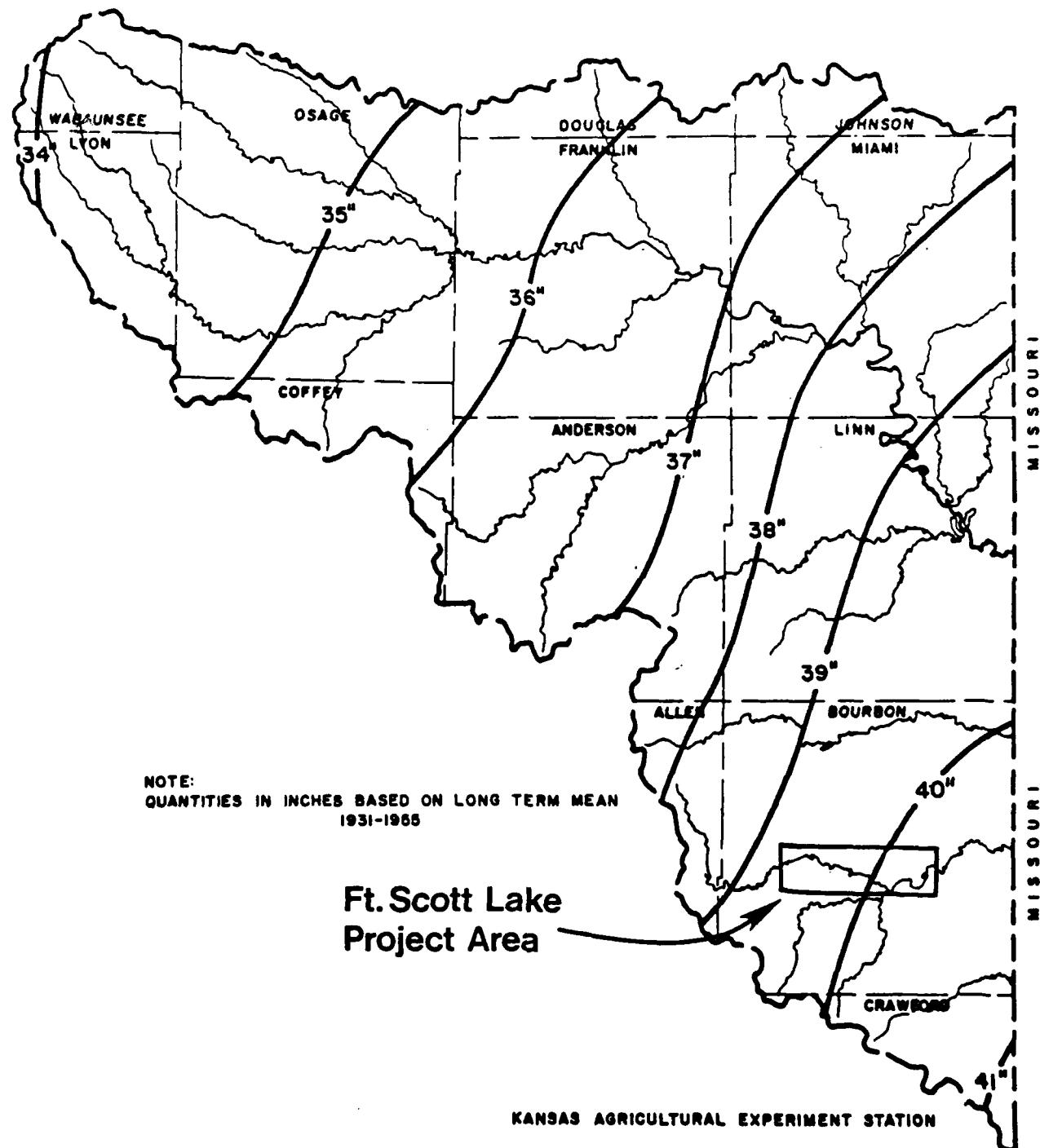
Soils developed on footslopes of the upland divides include the Ringo, Dennis and Zaar series. These soils formed in colluvium composed largely of shale. They are generally adjacent to the alluvial soils in the river valleys.

The terrace soils are developing from silty and clayey alluvial sediments in the river valleys. These soils are located above the modern floodplain. The Mason, Leanna and Lanton soils are the major terrace soils in the project area.

The floodplain soils are located adjacent to stream and river channels. They are characterized by weakly developed Entisols formed in stratified sediments. The Verdigris soils are the principle floodplain soils in the project area.

CLIMATE

The climate of the study area is classified by Thornthwaite (1948) as a B_4 (humid) mesothermal climate with a moisture surplus index from 20 to 40. The mean annual precipitation in Bourbon County is approximately 40 inches. Precipitation in the region decreases from east to west, with average-annual isolines showing a north-south orientation (Figure 2). Fall and winter are relatively dry seasons. The highest average monthly precipitation for the study area occurs in May, June and July. This maximum precipitation period is typical for southeastern Kansas partly because of frontal activity and partly because of convectional thunderstorm activity. During late spring,



VARIATION OF ANNUAL PRECIPITATION

MARAIS DES CYGNES UNIT

Figure 2. Map showing mean annual precipitation in southeastern Kansas.

maritime polar (mP) and continental polar (cP) air masses flow into southeastern Kansas and converge with warm, moist maritime tropical (mT) air that is flowing north from the Gulf of Mexico. The overrunning of the mP or cP air by warmer mT air often produces intensive rainfall along the zone of convergence.

The mean annual temperature for Bourbon County is approximately 58° F. The highest and lowest monthly mean temperatures for the study area occur in July (81° F) and January (34.2° F), respectively (Center for Public Affairs 1980). Mean annual temperatures decrease from southeast to northwest across the region.

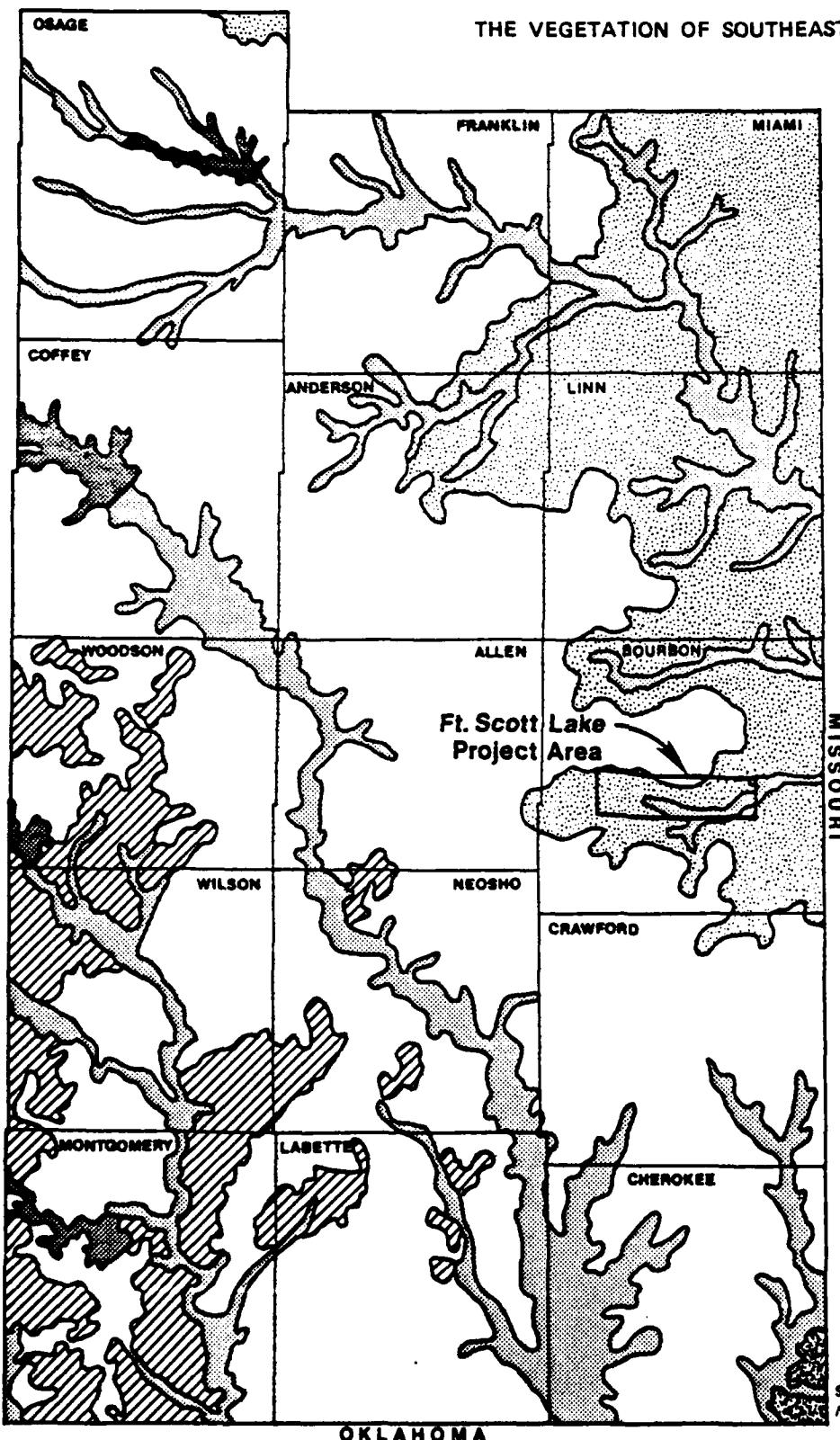
VEGETATION

Two major vegetation associations occur in the Fort Scott study area. These vegetation associations are (1) a combination of the bluestem prairie and northeastern oak-hickory forest and (2) the floodplain forest. The potential natural vegetation of southeastern Kansas is shown on the accompanying map (Figure 3).

The mosaic of bluestem prairie and northeastern oak-hickory forest in Bourbon County is a function of varying topography and soil types across the landscape. The bluestem prairie is found on the level to rolling uplands with clay-rich soils, and the oak-hickory association is found on steep slopes, ravines and in areas with coarse-textured soils. The bluestem prairie is composed of many forbs and few or no woody plants. The vegetation is dominated by little bluestem (Andropogon scoparius), big bluestem (Andropogon gerardi), switchgrass (Panicum virgatum), and Indian grass (Sorghastrum nutans). Approximately 90 species of grasses, forbs and legumes are commonly found associated with the tall grasses in southeastern Kansas. The bluestem prairie has largely been replaced by cropland and pasture. Isolated patches of the native vegetation can still be found throughout the region, especially along fence lines and abandoned railroad tracks.

The oak-hickory forest is dominated by several species of oak and hickory, including Shumard oak (Quercus shumardii), white oak (Quercus alba), butternut hickory (Carya cordiformis), and shagbark hickory (Carya ovata). Other common components are chinquapin oak (Quercus muehlenbergii), blackjack oak (Quercus marilandica), post oak (Quercus stellata), and black locust (Robinia pseudoacacia). Although most of the woody species have been cleared from the good agricultural lands, relatively large stands of hardwoods remain on the steep hill slopes.

Trees are common on the floodplains of the Marmaton River and its tributaries. The dominant species of the floodplain forest are hackberry (Celtis leavigata), cottonwood (Populus deltoides), black willow (Salix nigra), and American elm (Ulmus americana). Other common components of the forest are winged elm (Ulmus alata), sycamore (Platanus occidentalis), and butternut hickory (Carya cordiformis). The forests become narrower and often less dense to the west. Since the floodplains contain some of the richest agricultural lands in the region, much of the floodplain forest has been cleared for cultivation.



Source: Generalized from the map: *The Potential Natural Vegetation of Kansas*, A.W. Kuchler, 1974.

Figure 3. The potential natural vegetation of southeastern Kansas.

III. CULTURAL OVERVIEW OF EASTERN KANSAS

Archaeological investigations in eastern Kansas during the past three decades have produced a substantial body of data documenting successive cultural adaptations within the prairie plains environment. Most of this information has resulted from federally funded lake construction projects and has been administered by the U.S. Army Corps of Engineers and the National Park Service. Based on typological changes, radiocarbon dates and subsistence strategies, the cultural history of eastern Kansas can be divided into six broad cultural-historical periods: Paleo-Indian, Plains Archaic, Plains Woodland, Plains Village, Protohistoric and Historic. This sequence and terminology is largely in agreement with that recently used by Wedel (1964, 1978), Caldwell and Henning (1978) and Johnson and Wood (1980).

More recently, the Kansas Antiquities Commission has organized the archaeology of the state into a similar six stage sequence utilizing the terms Early Ceramic, Middle Ceramic, Late Ceramic in lieu of Plains Woodland, Plains Village and Protohistoric. This terminology, derived from Champe (1946), is designed to avoid the ambiguities arising from the dual use of terms, such as Plains Woodland and Plains Village, which denote both cultural traditions as well as sequential periods. While this scheme has seen considerable use in Kansas, it is generally unfamiliar to archaeologists in areas adjacent to the Plains. In order to address the largest possible audience and since most workers in the state recognize the interchangeability of these terms, we have retained the more traditional terminology. In order to avoid any possible confusion the Kansas Antiquity Commission equivalents to these terms have been listed in parentheses.

PALEO-INDIAN (15,000 - 7000 B.C.)

While occupation of North America prior to the Paleo-Indian period has often been proposed (Krieger 1964), no sites of pre-Paleo-Indian age are known for Kansas. Furthermore, no well-studied Paleo-Indian sites are known from Kansas, although such sites have been studied in surrounding states, and Paleo-Indian fluted Clovis points have been found on the surface in many areas of Kansas (Wedel 1959). Williston (1902 and 1905) reported a bison kill site in western Kansas. While this site was not well studied at the time of its discovery, it has recently been dated at 10,435 - 10,245 B.P. (Rodgers and Martin 1979). While well-documented evidence is still lacking, there is little doubt that Paleo-Indian populations lived in Kansas during the terminal Pleistocene. Since we know so little about this period in Kansas, any discovered sites dating to this period would provide significant data. It is probable that most sites dating to this period are buried in Pleistocene terrace remnants or consist of thin lithic scatters located in upland areas.

PLAINS ARCHAIC PERIOD (7000 B.C. - 100 A.D.)

For many years information on hunter-gatherer adaptations of the Archaic period in the Central Plains had been based on information from sites such as Allen, Simonsen and Logan Creek in Nebraska and Iowa. More recently, investigations at the Sutter site in northeast Kansas (Katz 1971), at the Snyder site in the El Dorado Lake area (Grosser 1973, 1977), at the Coffey site (Schmits 1978, 1980a) and at the Williamson site (Schmits 1980b) have provided considerable information for the Archaic period in eastern Kansas. Elsewhere in North America, the Archaic has commonly been divided into Early, Middle and Late (Frison 1978, Chapman 1975) sub-periods. Information in eastern Kansas is at present too sketchy to formally divide the Archaic into this tripartite subdivision. In general, there is a paucity of sites for the first half of the Archaic. Limited investigations at the Sutter site have produced dates from 7500 - 8000 B.P. Artifacts from the site include chert flakes, sandstone grinding tools and general lanceolate and stemmed points, while faunal remains are predominantly bison (Katz 1971). A second early Archaic occupation is present in Unit II at the Coffey site (Schmits 1980a). No diagnostic artifacts are associated with the component; however, a radiocarbon date of 6285 ± 145 B.P. was obtained.

For the latter half of the Archaic period, more substantial evidence is available. Excavations in Unit III at the Coffey site (Schmits 1978, 1981), have produced a stratified series of Late Archaic Black Vermillion phase living floors dating from 5200 - 5000 B.P. These cultural levels are deeply buried in channel fill deposits and represent late summer and fall extractive camps located on mud flats along the shores of an oxbow lake (Schmits 1980a). Diagnostic artifacts of the Unit III cultural levels include broad notched and stemmed points, Clear Fork gouges and Munkers Creek knives. A second site (De Shazer Creek) with similar artifacts has been located in Marshall County, Kansas. Dates at this site range from 4215 ± 180 to 5320 ± 790 B.P. (Schmits 1981).

The Archaic cultural sequence succeeding Unit III at Coffey and De Shazer Creek has been identified largely on the basis of Grosser's (1973, 1977) work at the Snyder site. This extremely important site contains the longest and most complete sequence of Archaic deposits in eastern Kansas. The radiocarbon dates from the base of the Chelsea phase component at Snyder range from 4650 - 4800 B.P. Points from this component are broad triangular short forms with corner notches. The Chelsea phase at Snyder is succeeded by the El Dorado phase, which has been dated at 3200 B.P. Points associated with the El Dorado phase include side-notched, corner-notched and stemmed forms with straight to concave bases. El Dorado phase components have also been located at Coffey (Schmits 1980a) and at Williamson (Schmits 1980b). The El Dorado phase at Snyder is succeeded by the Walnut phase. This complex is characterized by triangular corner-notched projectile points and has been dated at 2060 - 1970 B.P. A second series of Walnut phase cultural deposits has been located in Unit IV at Locality II of Coffey. Radiocarbon dates from these deposits range from 2320 - 2400 B.P. (Schmits 1981).

The preceding four-stage Late Archaic sequence spans a 3000 year interval covering the last half of the Archaic period. Overall, this sequence is characterized by notched and stemmed rather than lanceolate projectile point forms. Subsistence activities of these phases appear to be similar, in general consisting of a foraging adaptation to floodplain biotic communities. Settlement patterns are concentrated on the floodplain of small to medium-sized river valleys.

PLAINS WOODLAND PERIOD (A.D. 100 - 1000)

The Plains Woodland or Early Ceramic period in eastern Kansas is characterized by greater restriction of hunting and gathering ranges and increasing dependence upon the use of tropical cultigens. Two major traditions have been recognized for eastern Kansas during the Woodland period: the Hopewell and Plains Woodland (Johnson, In Press; Reynolds 1979a). Hopewellian components are identified by their similarity of artifact styles and subsistence practices with well-defined sites in Illinois and central Missouri (Wedel 1943; Johnson 1976). Hopewell sites appear to be concentrated in the far eastern (Johnson, In Press) and southern (Marshall 1972) areas of Kansas, with Plains Woodland sites located mainly in the central and northern areas (Reynolds 1979a; Johnson, In Press). There is considerable spatial overlap, however, between Plains Woodland components found near Kansas City and Hopewell components located near Topeka.

A number of Plains Woodland phases have been defined in eastern Kansas including the Grasshopper Falls phase, the Greenwood phase and the Cuesta phase (Reynolds 1979a). The Grasshopper Falls phase is principally known from the Mahn, Anderson and Teaford sites located along the Delaware River in northeast Kansas (Reynolds 1979a). Habitational structures consist of oval pole dwellings covered by matted twigs and grass. Small amounts of daub indicate some mud plastering. Small, shallow basin pits are generally present. Grasshopper Falls phase ceramics are predominantly cordmarked or smoothed, grit tempered jars with conical bases. Rims are plain and often constricted. Projectile points are medium to large corner-notched with expanding stems. Contracting-stemmed dart points, as well as small Scallorn arrow points, are also present. The settlement patterns consisted of small, isolated clusters of households on terraces adjacent to secondary drainages. Subsistence was primarily focused on hunting and gathering. Horticulture was of minimal importance (Reynolds 1979a:65-75).

Greenwood phase Woodland sites are located in east central Kansas and are characterized by cordmarked, limestone tempered ceramics. The limited information that is available on habitational structures indicates that oval or round, daub covered houses were present. Greenwood phase sites have recently been documented in the John Redmond Reservoir area and include the Gilligan (Jones and Witty 1980) and Salb sites (Schmits 1980c).

The Cuesta phase components have been recognized along the Elk River and Big Hill Creek in southeast Kansas. Diagnostic traits of this phase include large, oval to circular postmold patterns with widely

spaced individual posts. Interior house features include pits and hearths. Ceramics include plain and decorated vessels with dentate, punctate and stick impression. The principal Cuesta phase site investigated by Marshall (1972) in the Elk City Lake area was the Infinity site. At least five large habitational structures, indicating the presence of a nucleated village, were present at the site. Features from the site include a midden, dog and human burials and pits. Radiocarbon dates from the Cuesta phase component at Infinity are A.D. 780 ± 80 and A.D. 970 ± 80 .

Additional Cuesta phase components have been located in the Big Hill Lakes area (Brogan 1981). Site 14LT304 contained evidence of two widely spaced houses. No midden or burials were found. Artifacts included expanding and contracting stemmed dart points, Scallorn arrow points and Cuesta ware ceramics. A house, evidence of a midden, ceramics and lithics indicative of a Cuesta phase occupation were found at 14LT316. Based on an analysis of Cuesta phase settlement patterns, Brogan (1981) recognizes two contrastive settlement types: the large, nucleated village located along major drainages, as exemplified by the Infinity site, and smaller, isolated households or hamlets found on secondary streams. Site catchment analysis along with floral and faunal analysis indicate that Cuesta phase subsistence was focused on riverine oak-hickory forest. Brogan suggests that the two settlement types may result from the differential carrying capacity of major vs. tributary streams.

While Plains Woodland sites have been investigated and a number of cultural units are presently recognized, the spatial and temporal relationships between these complexes are poorly known. Relatively few radiocarbon dates are available and almost no information regarding subsistence and lithic procurement patterns is available. The social relationships, including ethnic boundaries between the various Plains Woodland groups and between Plains Woodland and Hopewellian social groups in eastern Kansas, need to be examined in detail.

PLAINS VILLAGE PERIOD (A.D. 1000 - 1500)

During the Plains Village or Middle Ceramic period, village sedentism and reliance on agriculture became established, as evidenced by the presence of larger sites, denser debris scatters and more complex artifact assemblages. Several social units referred to as variants within the Plains Village Tradition are present in the eastern half of Kansas. These variants, generally referred to as aspects, have recently been referred to as phases by Caldwell and Henning (1978). Included are the Upper Republican, the Smoky Hill and the Nebraska aspects (phases). Plains Village sites east of the Flint Hills and south of the Kansas River have been included with the Pomona focus (Witty 1978).

Plains Village populations in north central Kansas have primarily been identified as Upper Republican. Upper Republican ceramics are predominantly sand tempered with collared rims and elaborate decoration. Two constituent phases, the Solomon River phase and the Upper Republican phase have been defined. The Solomon River phase is the earliest dated

manifestation of the Central Plains Tradition, dating as early as A.D. 800 - 850. Some fifteen sites were located and excavated in the Glen Elder locality. Solomon River phase sites are characterized by rectangular houses with four central support posts and cordmarked, globular or subconoidal vessels with incised decorations. The Solomon River phase has been interpreted as ancestral to both the Smoky Hill phase and the later classic Upper Republican phase in Nebraska (Caldwell and Henning 1978:127).

Smoky Hill components are concentrated in the Smoky Hill, Blue and Kansas River drainages north and west of Topeka (Witty 1978). This complex appears to be agriculturally oriented with larger sites, more permanent earthlodge houses, more artifactual debris and a more complex tool assemblage present. Smoky Hill ceramics consist of clay or shale tempered cordmarked vessels, which often have a collared or thickened rim. Important western Smoky Hill sites include the Minneapolis site and the Whiteford burial site near Salina. Eastern Smoky Hill sites include the Griffing site west of Manhattan (Wedel 1959) and the Budenbender site north of Manhattan.

The Nebraska phase has been identified in extreme northeastern Kansas along the Missouri River Valley, and is thought to extend over much of northeastern Kansas (Wedel 1959). Recent analysis of Nebraska phase data indicates a close relationship between this culture and the Upper Republican phase. The earliest sites date to A.D. 1000 - 1300 (Caldwell and Henning 1978).

The Pomona focus appears to represent a continuation of the Plains Woodland Tradition, practicing limited agriculture, and has artifactual similarities to other Central Plains Tradition complexes. House form is a strong indicator of this Plains Woodland continuity and consists of small, generally round or oval, post and lathe structures which were covered with mud and grass. Sites included within the Pomona focus are characterized by small hamlets consisting of light frame, mud and grass-covered structures which often have interior storage pits but generally lack interior hearths. Exterior hearths have been reported from a number of these sites. Ceramics predominantly consist of the sherd tempered, cordmarked Pomona ware. Projectile points include small triangular corner-notched and side-notched arrow points along with larger side-notched dart points (Witty 1967, 1981). Preservation of organic remains at these sites is poor. However, most of these sites were excavated prior to the development of modern recovery techniques, such as flotation and water screening. As a result, the subsistence patterns associated with these sites are not fully known. The limited data available indicate a hunting and gathering economy which was at least minimally supplemented by limited horticulture (Schmits et al. 1980). Important Pomona sites include the Hart site in Pomona Lake area (Wilmeth 1970), Wiley and Harsch in the Melvern Lake area and Dead Hickory Tree in the John Redmond Reservoir area (Schmits et al. 1980).

PROTOHISTORIC PERIOD (A.D. 1500 - 1700)

The Protohistoric period refers to the time between initial contact by Native Americans with Euro-Americans and the establishment of permanent Euro-American settlements. For many parts of the Great Plains, such a definition would extend from the time of initial contact into the mid 19th century. The Protohistoric is usually seen as ending when regular or prolonged contact is established. In eastern Kansas, this period is generally seen as ending in the 18th century when licensed French traders began to operate in the area.

Spanish expeditions made the first direct contact, beginning in 1541 with Coronado's quest for "Quivira." Ancestors of the Wichita, Pawnee, Osage and possibly Kansa lived in eastern and central Kansas at this time. Spanish descriptions contain references to large, agriculturally based, grasslodge villages for southern and central Kansas, probably "proto-Wichita" groups. To the north, the Pawnee bands were recorded by the Spanish. It is probable that over much of eastern Kansas the basic Plains Village Tradition lifeways continued into the Protohistoric period.

HISTORIC PERIOD (A.D. 1700-PRESENT)

Towards the end of the 17th century, eastern Kansas was among the lands claimed by France as the Louisiana Territory. During the 18th century, the territory was nominally controlled at different times by three European powers. When France regained control in the early 19th century, the Emperor Napoleon sold the territory to the United States. Settlement in the Louisiana Territory when it was controlled by the European power occurred almost exclusively along the Mississippi River. Interior settlements consisted of military outposts and fur-trade posts. Following establishment of U.S. sovereignty, exploration and settlement of the territory increased at a dramatic pace. Shortly after the end of the first quarter of the 19th century, the impact of American settlement expansion was felt directly in Bourbon County.

In large measure, because the region was not desired by Euro-Americans, the project area and adjacent lands were involved in land transfers between the U.S Government and North American Indian groups. Most of southern Bourbon County was among the lands ceded to the Cherokee Indians by the Treaty of 1835. The remainder of the county, including the project area, was ceded to New York Indians by the Treaty of 1837. However, the New York Indians never did emigrate and eventually the land was claimed by whites.

Permanent Euro-American occupation in the vicinity of the project area began in 1842 with the establishment of Camp Scott, later named Fort Scott. Camp Scott resulted from an 1837 War Department plan to establish a series of military posts to defend the western frontier. Lt. John Hamilton and 19 men actually established the post on April 9, 1842. The military occupation at Fort Scott does not appear to have had much direct effect on the project area. Although the fort was supposedly built to protect settlements to the east from Osage

depredations, life was generally quiet. The garrison was small, few civilians were present, and time was generally passed hunting and fishing (Robley 1894). In truth, Fort Scott was neither a major military installation nor a serious pioneering effort.

True settlement came to the project area and much of Kansas only after passage of the Kansas-Nebraska Act of 1854. This act, which nullified the Missouri Compromise of 1820, created the territories of Kansas and Nebraska and left the decision of whether a territory would enter the Union as a free or slave state up to the inhabitants, a process which came to be called "popular sovereignty." Because Kansas shared a common border with Missouri, which was a slave state, Pro-Slavery forces poured across the border to sway the territory into their column. The Pro-Slavery influx was countered by large scale emigration of settlers from free states. Such blatant, wholesale, politically motivated population moves, gave rise to the derisive term, "squatter sovereignty." Being located on the Missouri border, Bourbon County was among the first counties to feel the brunt of the politically inspired settlement spree. The county was organized in 1855 by predominantly Free-State supporters, although the county derives its name from Bourbon County, Kentucky (a slave state). Marion and Marmaton townships, on which most of the project area is located, were organized in 1855 and 1859, respectively.

As Reps (1969) has pointed out, the settling of the American west was accomplished through the establishment of towns with smaller outlying communities, rather than by the establishment of individual farms as postulated by Turner (1894). Such was the case in Bourbon County. Initial settlement centered around the community of Fort Scott. This was followed by the establishment of other small outlier communities such as Marmaton, Redfield, Uniontown, etc.

During the volatile years just before and during the War Between the States, the contending factions in Bourbon County contributed significantly towards earning "Bleeding Kansas" as the name of their territory. Inhabitants of the project area were undoubtedly involved with the violence, some as perpetrators, others as victims. Some of the atrocities occurred in the project area. One site, the town of Marmaton (14B04) is known to have been the site of a raid by Confederate irregulars from Missouri led by Major Courcey. A number of men were killed and several shops burned (Bradley and Harder 1974:21-57).

At the conclusion of the War Between the States, Bourbon County followed a course much like other agriculturally oriented areas in Kansas. Farming remained a mainstay but cattle production was expanded and there was some industrial growth. This area does not appear to have been subjected to railroad boosterism as other areas in the Plains were. Nor does the study area appear to have been a heavy growth area.

IV. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS IN THE FORT SCOTT LAKE AREA

Previous archaeological investigations in the vicinity of the Fort Scott Project area have not been extensive. Three surveys have been conducted at the proposed site of Fort Scott Lake (Brown 1964, Bradley 1969, Bradley and Harder 1974). Additionally, three surveys have been conducted in Bourbon County outside the project area (Feagins 1979, Kansas State Historical Society 1974 and Reynolds 1979b). The most extensive survey in the Bourbon County is an ongoing study of the Little Osage River Valley located to the north of the Fort Scott Lake Project. This study, conducted by Feagins, has resulted in the location of 246 sites (1973a, 1973b, 1973c, 1975 and 1978). Recently, Environment Consultants, Inc. completed an Historical and Architectural survey of the proposed Fort Scott Lake Project area (Baird et al. 1982). In neighboring Vernon County, Missouri, archaeological research began in the late 1930's when the University of Missouri excavated historic Osage Indian sites (Berry, Chapman and Mack 1944). An archaeological survey of the proposed Nevada Reservoir, in Vernon County, identified eight sites (Wood and Pangborn 1971). As can be seen, the available archaeological data for the project area is not extensive, although data from surrounding areas is more substantial.

Formal archaeological investigations associated with the proposed Fort Scott Lake began in 1963 with a site survey conducted by the Smithsonian Institution, Missouri Basin Project (Brown 1964). Six sites were located: 14B0201, 14B0202, 14B0203, 14B0204, 14B0205 and 14B0206; all of which were recommended for testing (Table 1). Neither the location of the areas surveyed nor the methodology were described for this project, although the locations of the discovered sites suggest that portions of both the Marmaton River and Paint Creek were investigated.

During the summer of 1967, the University of Kansas Museum of Anthropology conducted a site survey and testing project under a contractual agreement with the National Park Service (Bradley 1969). Eleven new sites were recorded; five of which were tested (Table 1). In addition, test excavations were conducted at 14B0202 and 14B0203 in accordance with Brown's (1964) recommendations.

The University of Kansas Museum of Anthropology continued the surveys, testing and major excavation in the Fort Scott Lake area in 1968 under a second agreement with the National Park Service (Bradley and Harder 1974). The 1968 University of Kansas investigation located an additional six sites, conducting test excavations at three (14B018, 14B020, 14B022), and at seven previously recorded sites (14B03, 14B04, 14B020, 14B026, 145B0201, 14B0203, 14B0204 and 14B0205). The report of the 1968 investigations of the proposed Fort Scott Lake area documents the excavations at 14B03, 14B04 and 14B026 (Bradley and Harder 1974). Of these sites only 14B03 and 14B04 were located within the proposed project area. Site 14B026 was located four miles east of the town of Fort Scott and has never been part of the original or presently proposed

Table 1. Previously recorded archaeological sites in the Fort Scott Lake area.

SITE NUMBER	TOPOGRAPHIC POSITION	CULTURAL AFFILIATION	LEVEL OF INVESTIGATION	REFERENCE
14B01	Terrace	Archaic/ Plains Woodland	Tested	Bradley 1969
14B02	Terrace	Plains Woodland/ Plains Village	Survey	Bradley 1969
14B03	Terrace	Plains Woodland	Excavated	Bradley 1969
14B04	Upland	Historic American	Tested	Bradley and Harder 1974
14B05	Upland	Unknown	Tested	Bradley 1969
14B06	Upland	Historic American	Tested	Bradley 1969
14B07	Terrace	Unknown	Tested	Bradley 1969
14B08	Terrace	Unknown	Survey	Bradley 1969
14B09	Terrace	Unknown	Tested	Bradley 1969
14B010	Terrace	Unknown	Survey	Bradley 1969
14B011	Terrace	Historic Indian	Survey	Bradley 1969
14B016	Terrace	Plains Woodland	Survey	Bradley and Harder 1974
14B017	Terrace	Unknown	Survey	Bradley and Harder 1974
14B018	Terrace	Unknown	Tested	Bradley and Harder 1974
14B020	Terrace	Plains Woodland	Tested	Bradley and Harder 1974
14B021	Terrace	Unknown	Survey	Bradley and Harder 1974
14B022	Terrace	Unknown	Tested	Bradley and Harder 1974
14B0201	Terrace	Plains Village	Tested	Brown 1964 Bradley and Harder 1974

Table 1 continued. Previously recorded archaeological sites in the Fort Scott Lake area.

SITE NUMBER	TOPOGRAPHIC POSITION	CULTURAL AFFILIATION	LEVEL OF INVESTIGATION	REFERENCE
14B0202	Terrace	Plains Woodland	Tested	Brown 1964 Bradley 1969
14B0203	Terrace	Plains Woodland/ Plains Village	Tested	Brown 1964 Bradley 1969 Bradley and Harder 1974
14B0204	Terrace	Plains Woodland	Survey	Brown 1964 Bradley and Harder 1974
14B0205	Upland	Unknown	Tested	Brown 1964 Bradley and Harder 1974
14B0206	Terrace	Unknown	Survey	Brown 1964

lake area. No information is provided on the testing of sites 14B018, 14B020, 14B021, 14B022, 14B0201, 14B0203, 14B0204 and 14B0205. The location of the sites located as a result of the 1964, 1968 and 1969 investigations is shown in Figure 4.

None of the previously recorded sites have been nominated to the National Register. Although the available documentation for the known sites is limited, the site survey forms and reports do provide data that can be used to refine the project area's cultural sequence within the general culture history of eastern Kansas presented in the previous chapter. The earliest known occupations of the Fort Scott Lake area are documented by Archaic point styles from a number of sites, although the presence of a well defined occupation is not indicated at any of the previously recorded sites.

There is better evidence for Plains Woodland occupation of the Fort Scott Lake project area. This period, from about A.D. 1-900, has been documented at seven sites: 14B01, 14B0102, 14B03, 14B016, 14B020, 14B0202 and 14B0204. A rather large sample of Woodland deposits, including ceramics and projectile points along with cultural features and charcoal suitable for dating, were recovered from 14B026, 14B03 and 14B020 (Bradley and Harder 1974). The original investigators interpreted these assemblages to be Middle Woodland and compared them with the Cooper Focus of northeastern Oklahoma.

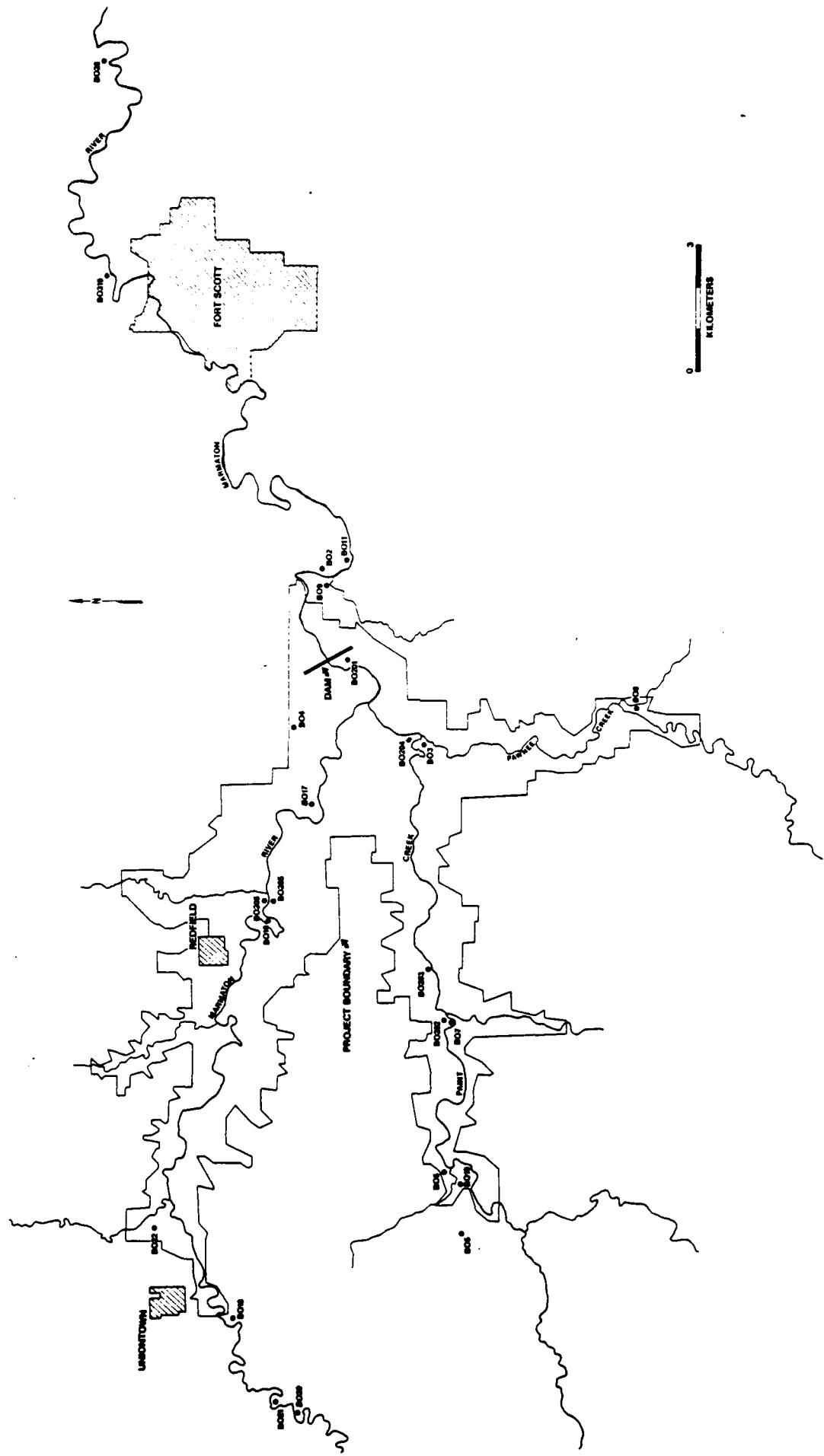


Figure 4. Location of previously recorded sites in the Fort Scott area.

14B03 is located on the T-1 terrace just to the west of the confluence of Paint and Pawnee creeks. A total of 44 square meters of the site were excavated. Cultural material was concentrated in the upper 30 cm of the soil profile. Features excavated include a cluster of burnt limestone identified as a hearth, a nearby charred area and a basin shaped pit. Ceramics from the site include 46 sherd tempered body sherds with a smoothed surface finish. Hematite appears to be present in some sherds. The single rim recovered is slightly flaring with a rounded lip. One sand tempered cordmarked body sherd was also present. Projectile points include several large dart points and a number of small arrow points. The dart points include one broad basally notched specimen and one stemmed point. The arrow points are predominantly Scallorn points. Other tools identified include gouges, a scraper and a knife fragment and several manos.

14B026 is located on an erosional remnant five miles east of the present town of Fort Scott. The site had been located in 1961 when a road cut through the site exposing human skeletal material. At least thirty-two square meters of the site were excavated in 1969 although the exact amount excavated is not clear in Bradley and Harder's report. The cultural material at the site appears to have been concentrated in the upper part of the soil profile. Five burials were encountered during the course of the excavation. Included were four females and a male all over 40 years of age.

Ceramics from 14B026 included 32 plain surfaced body sherds and six cordmarked sherds. Twenty-eight of the plain surfaced sherds are sherd tempered and four are described as shell tempered. The cordmarked sherds include five sherd tempered specimens and one limestone tempered specimen. One dentate stamped sherd was also recovered although the temper is not listed. Projectile points include notched and stemmed points ranging in size from small Scallorn arrow points to larger triangular notched and stemmed dart points. A large number of bifaces and drills were also recovered from the site. Bone tools include perforated canines, cut antler tines, a bone pin and a bone fishhook. The summary section of the report mentions that manos and a quantity of bone were also recovered from the excavations although this is not described in detail.

14B020 is located west of the Fort Scott Lake project on the T-1 terrace of the Marmaton River approximately three miles southwest of the present town of Uniontown. Although not reported on by Bradley and Harder (1974), a partially completed manuscript on the excavations is present in the University of Kansas files. The excavations at the site consisted of a 65 m trench 50 cm in width excavated across the western edge of the site and six two m squares opened adjacent to the trench. An additional 32 two m units were opened at the base of a grader cut. Cultural material was concentrated in the upper 45 cm of the soil profile. Features encountered at the site include six basin shaped pits and a post mold.

Ceramics from 14B020 include five simple stamped body sherds, 20 plain surfaced body sherds, 64 cordmarked body sherds and six cordmarked rim sherds. The simple stamped body sherds are limestone tempered, the

plain body sherds are both limestone and clay tempered. The cordmarked sherds are predominantly clay tempered and several are tempered with limestone or hematite. The cordmarked rims are straight with rounded lips. Decoration consists of conical punctates on the lip. Projectile points from the site appear to consist of a combination of large triangular corner-notched arrow points and small Scallorn points. Other chipped stone tools from the site include a drill, several bifacial knives, scrapers and a number of edge-modified flakes. Several groundstone tools were also present.

The next period of occupation in the Fort Scott Lake area is the Plains Village period (ca. A.D. 1000-1500). This period is possibly represented at sites 14B02 and 14B0203. Previous reports of investigations at these sites state that each resembles Central Plains Tradition components. However, the level of investigation for Plains Village sites in the lake area consisted of either surface surveys or limited testing. Only one of the sites tested, 14B0203, appeared to contain significant subsurface deposits. As noted in the cultural overview, the architecture of the houses built during this period is an important diagnostic trait for the different cultural units in eastern Kansas. However, none of the Plains Village sites in the lake area have yielded evidence of such structures. Therefore, it is difficult to determine which particular cultural units are present.

No protohistoric sites have been recorded in the lake area, although there is evidence of at least one historic aboriginal period occupation at 14B011. This site, which may be outside the project area, consists of a scatter of chipped stone tools, debitage and Euro-American artifacts dated to the mid-19th century. Historic Euro-American occupations in the lake area include the old town site of Marmaton (14B04). The site figures significantly in the social and political development of Bourbon County during the period between 1860-1880. Excavations were conducted at the site by Bradley and Harder (1974). A second Historic American site is 14B06, which consists of an historic dugout.

V. RESEARCH DESIGN

A research design defines the goals of an investigation and outlines the methods by which these goals can be addressed. Such designs emphasize regional research questions thought to be significant in the study of past human adaptive patterns in a given area. The research goals for the Fort Scott archaeological and geomorphological inventory and evaluation program were based on resource management requirements and developed from the preceding literature and background search.

RESEARCH GOALS

The research design for the project was initially set forth in ESA's proposal for the project. This design was formally developed during the early stages of the project and modified during the course of the investigations as additional data became available. The design for the project had three major research goals: (1) construction of a local cultural sequence, (2) delineation of the terrace sequence and alluvial chronology, and (3) reconstruction of settlement-subsistence patterns. It was believed that the collection of these sets of data would be most useful in construction of a predictive model regarding site location in the Fort Scott area. This predictive model will be a useful management tool for future cultural resource work in the project area.

Culture History

Due to the limited and sporadic series of investigations in the Fort Scott Lake project area, very little is known concerning its culture history and chronology. Only 23 sites have been recorded and these are mostly Plains Woodland sites which were occupied from A.D. 1-1000. Even the sites with assigned cultural affiliations have generally had insufficient samples of diagnostic artifacts and lacked radiocarbon dates.

There was almost no evidence in the project area for early human occupations during the Paleo Indian, Early Archaic, Middle Archaic and Late Archaic. Sites of these periods are present in the High Plains (Frison 1978), northern Kansas (Schmits 1978), northern Oklahoma (Henry 1978) and throughout Missouri (Chapman 1975). A survey of the Little Osage River drainage which includes the Marmaton River (Feagins 1979) has indicated that early occupations probably occurred in the area. Therefore it was expected that such components were present in the project area, but that they had been obscured by past survey biases or by post-occupational geomorphological processes. One of the research goals of the Fort Scott project was to locate earlier Paleo-Indian and Archaic sites.

The Plains Woodland period is the best known cultural historical period for the project area. This period covered a broad expanse of

time from about A.D. 1-900 and had been documented at seven sites. In many portions of the Prairie Plains border area the Woodland period has been divided into sub-periods of smaller temporal units or into phases which reflect specific cultural adaptations. For the most part this has not been done in the Fort Scott area although there is some indication that subdivision may be possible. The rather large Woodland assemblage from the Slippery Rock site (14B026) and site 14B03 (Bradley and Harder 1974) was interpreted by the original investigators to be Middle Woodland and compared with the Cooper Focus of northeastern Oklahoma. However, comparison of artifacts from these sites with assemblages from more recently defined Plains Woodland complexes, such as the Greenwood phase (Jones and Witty 1980), the Grasshopper Falls phase (Reynolds 1979a) and the Herta phase (Blakeslee and Rohn 1982), suggests that the Fort Scott sites have a closer relationship to Plains Woodland complexes than to Middle Woodland Hopewellian related complexes. A second research goal of the Fort Scott project was to determine the cultural affiliation of Woodland sites located in the area.

Terrace Sequence and Alluvial Chronology

Although there have been relatively few geomorphic studies of river valleys in southeastern Kansas, this portion of the eastern Plains is encircled by rivers that have yielded stratigraphic information which has been used to reconstruct the regional alluvial chronology for the Late Holocene. As in many investigations of river terraces, the only fluvial changes that are well documented for the Quaternary in the Central Plains are the cyclic patterns of aggradation, stability, and degradation. For example, radiocarbon dates from Late Archaic occupations preserved in a buried paleosol suggest that the upper Walnut River valley in south-central Kansas was slowly aggrading between ca. 4000 and 2000 B.P. (Artz 1980). During this same period, the floodplain at the Coffey site on the Big Blue River in north-central Kansas (Schmits 1980a) and on the lower Pomme de Terre River in western Missouri (Haynes 1976) were also relatively stable. However, between 4000 and 2000 B.P., streams of the Verdigris River basin in northeastern Oklahoma were rapidly aggrading, according to Henry (1978) and Hall (1977). Vegetational and geological differences between the two regions, coupled with climatic shift, may account for the out-of-phase relationship.

The dynamic nature of fluvial systems illustrates their close relationship to past human events. Human settlements are often located close to streams on floodplains or terraces. Sites located in these environments are buried as rivers flood and destroyed as rivers meander into older alluvial deposits. Consequently, data regarding past fluvial systems, such as periods of aggradation and degradation and the dates these events took place, are important in locating archaeological sites as well as interpreting past human behavior.

The objectives of the geomorphological investigations at the Fort Scott Lake project area were to (1) obtain paleoecological data for environmental reconstruction, (2) establish a terrace sequence for the

lake area, and (3) correlate archaeological deposits with the geomorphic data. The collection of these sets of data were oriented to satisfy the scope-of-work and provide the data needed for the study of settlement-subsistence systems and formulation of a predictive model of cultural resources in the project area.

Settlement-Subsistence Patterns

For the most part explicit statements regarding settlement patterns have been made for areas adjacent to southeastern Kansas. Reynolds (1979a) has characterized the settlement pattern for Grasshopper Falls Phase (a Plains Woodland complex present in northeastern Kansas) as consisting of a small isolated cluster of nuclear households or individual nuclear households occupying terraces adjacent to secondary drainages. He states that a sedentary life style is indicated with at least part-time residence each year in domestic houses of some permanence. Henry (1978:59) has suggested a less sedentary settlement pattern for Plains Woodland populations to the southwest in the Hominy Creek valley of north-central Oklahoma. He characterizes this pattern as consisting of a central-based circulating pattern with small social groups present during summer-autumn and large group aggregation during other seasons.

To the east in the Kansas City area Johnson (1976) has suggested a Middle Woodland Kansas City Hopewell settlement pattern consisting of large permanently occupied villages located near the mouths of tributaries of the Missouri River and small ancillary camps located upstream in the tributaries. Whether a similar settlement pattern holds for Plains Woodland populations in southeastern Kansas has not been investigated. Data recovered from the project can therefore provide an opportunity to investigate the general degree of sedentism among Plains Woodland populations.

Plains Village Tradition sites have been more intensively investigated in eastern Kansas. Of principal concern to the Fort Scott project is the Plains Village Tradition Pomona focus (Witty 1967). In the Pomona Lake area Plains Village Tradition Pomona focus sites are located on the floodplain of One Hundred Ten Mile Creek (Wilmeth 1970). The Harsh site, a Pomona site in the Melvern Lake area, was located on the floodplain of Stevens Creek, a tributary of the Marais des Cygnes (Moore and Birkby 1964). Dead Hickory Tree, a Plains Village site in John Redmond Lake, was located on the floodplain of the Neosho River (Schmits *et al.* 1980). To the east on the Little Blue Drainage in Jackson County, Missouri, May Brook phase Plains Village sites were located in low depressional areas of the floodplain and appear to represent late summer and fall extractive camps rather than sites occupied over a long period (Schmits 1982). Further information is required regarding the range of Plains Village settlement patterns in southeastern Kansas. In particular, a determination of whether the sites were occupied on a year round or seasonal basis is needed.

At present, no well defined Archaic sites are present in the project area. In general, it was thought that the extent to which Archaic settlement-subsistence patterns could be examined was dependent on the number of additional Archaic sites that are encountered. However, the current understanding of the Archaic in southeast Kansas is so limited that any contribution is potentially significant.

Data from Archaic sites such as Snyder (Grosser 1973, 1977), Williamson (Schmits 1980b) and Coffey (Schmits 1978, 1980a) indicate that these sites are invariably located in low depressional areas of the floodplain which are subjected to seasonal inundation. In so far as can be determined, these sites appear to have been dry season extractive camps occupied by hunter-gatherers during the late summer and fall. The question that presents itself is where were sites located during other seasons, such as during the winter or during the spring and early summer when the lowlands were inundated by flooding.

Work to the east of the project areas in the Kansas City area on the Nebo Hill settlement-subsistence pattern (Reid 1980, Reeder 1980) indicates the presence of dicotomous lowland (interpreted to be winter) and upland (interpreted to be warm weather) occupations. Such a dicotomous topographic positioning of settlements could hold for eastern Kansas. Little surveying of the uplands in the Fort Scott Lake project area has been conducted. It is not presently known with certainty whether upland Archaic sites are present in the area. The survey of the Fort Scott Lake project area, which includes lowland floodplain area, slopes and upland topography, presents an opportunity to determine the full range of locations used for Archaic settlements. The results of the survey may provide important information regarding Archaic settlement-subsistence patterns in eastern Kansas and how these patterns compare with adjacent areas such as eastern Missouri.

Of the 23 sites recorded by previous Fort Scott Lake project area surveys, 16 occur within the proposed project boundaries. The cultural affiliation and geomorphic setting of these sites is presented in Table 1. As can be seen the majority (18) of the sites are located on the terrace of the river. Five are located on the uplands or on the slopes. Terrace sites include six with Woodland components and ten with unknown cultural affiliation. One additional site appears to be an Historic American site. Upland sites include two sites with unknown cultural affiliation and two Historic sites. The available data indicates that Woodland sites are primarily present on the terraces. Historic American sites are present in the uplands.

Predictive Model

The development of predictive models has become a focal point in cultural resources management. Aldenderfer and Bezsylyko (1981:21) have noted that the most reliable predictive models are those based on well-structured, comprehensive sampling strategies designed to provide quantitative estimates of site distribution in reference to a postulated settlement pattern. Predictive statements can then be made about location site type and assemblage content for a given environment. One

of the objectives of the Fort Scott project was to locate, record and evaluate the cultural resources of the project area and to develop a predictive model of archaeological sensitivity for the project area based on the known site distribution.

The results of the geomorphological investigations along with the study of settlement-subsistence systems were designed to provide two major sources of information for the development of the predictive model. First the delineation of a terrace and alluvial chronology was designed to provide information regarding the age of the alluvial sediments. This information will indicate the parameters for the location of sites of various ages on the floodplain. For example Plains Village Tradition sites might be located on the T-0 floodplain. Late Archaic sites might be buried on the T-1 terrace fill or located on the surface of higher terraces. We might find that earlier Archaic sites are deeply buried in the T-1 terrace fill, or conversely we might find that various valleys were scoured out during the early Holocene. If the latter, Early Archaic sites would be preserved only on the uplands.

Secondly, it was anticipated that a backhoe trenching program would locate a number of buried sites in primary sedimentary contexts. Information regarding the association of sites with specific depositional environments would permit the formulation of predictive statements regarding the location of sites on project lands outside the survey area. When completed the predictive model would be a useful management tool in developing future survey strategy and predicting site locations in unsurveyed areas of the Fort Scott Lake project area.

METHODOLOGY

The cultural resources study at the Fort Scott Lake project area consisted of an intensive on the ground archaeological survey and site program of 10 percent of the proposed project lands and associated geomorphological investigations. According to the scope-of-work (Appendix I) these investigations were to determine: (1) the number of archaeological sites; (2) their areal and temporal extent; (3) their cultural scientific importance; (4) their eligibility for the National Register of Historic Places; (5) appropriate mitigative methods for eligible sites; and (6) the terrace sequence and alluvial chronology of the Marmaton River drainage. The study consisted of three sequential phases: intensive archaeological field survey and testing and geomorphic investigations, laboratory analysis and report preparation.

Archaeological Field Survey and Testing

The scope-of-work called for a specific sampling strategy to be delineated in the research design. This strategy was to specify the location of the area within the project locality to be surveyed. Operationally three major criteria played a part in determining the area to be sampled. First, only those areas where the right of access had been obtained could be considered.

The area of the proposed Fort Scott Project consists primarily of private property, although a portion along Pawnee Creek is owned by the Kansas Fish and Game Commission. The scope-of-work (Appendix I) indicated that the U.S. Army Corps of Engineers had obtained right-of-entry for survey at the project. In reality, right-of-entry had been secured from only a portion of the property owners. Many property owners who had signed right-of-entry forms were unclear as to the intent of the proposed investigations, and in many cases would not allow subsurface archaeological investigations. Therefore, the areas selected for survey were limited to those areas where right-of-entry could be negotiated. For the most part, local property owners were enthusiastic and cooperative during the course of the investigation.

A second criterion for the selection of survey areas concerned the element of surface visibility. While shovel testing is an appropriate technique in localities where visibility is generally poor, it is not universally considered to be reliable and does not produce nearly as much material as a survey oriented towards areas with good visibility. Therefore, the survey was focused on those areas with adequate visibility. The initial RFP for the work was issued in September 1981. ESA anticipated that the contract would be awarded and field investigations could proceed during the spring of 1982 during optimal surveying conditions. For various reasons the award of the contract was delayed until May 7, 1982. The spring and summer of 1982 were extremely wet resulting in a lush growth of vegetation. By the time the research design was approved in early August, surface visibility in the project area was limited. The field investigations had to be delayed until the fall of 1982 in order to obtain better visibility. By October, row crops in the area had been harvested and fields were being prepared for wheat planting. The third criterion used in selecting survey areas was the need to sample different geomorphological terrain types. With the above two constraints in mind, survey units were selected to provide good coverage of all three geomorphic terrain types. Lastly, based on review of the previous work, it seemed appropriate to concentrate on areas not extensively covered in the past.

The archaeological survey and testing staff consisted of a six man team: the Principal Investigator, the Project Archaeologist, two Survey Archaeologists and two experienced technicians. Complete coverage of each selected survey unit was provided by transect sampling. The transect sampling method used consisted of a pedestrian field survey technique in which a surveyor traversed an area along a previously selected route while maintaining a constant distance between himself and other members of the survey crew. The transect routes were linear or curvilinear. Previously available data was insufficient to define an appropriate transect interval based on site size. Therefore, a transect interval of 50 m was employed. Additionally, high probability areas such as terrace remnants were surveyed at 30 m intervals.

The locations of sites were systematically mapped. Maps tying the site to topographic contours and natural features were made with an alidade. Information was recorded so that sites could easily be located on U.S. Army Corps of Engineers project maps. After the site had been

located a small sample of artifacts was collected and the site was located on U.S.G.S. 7.5 minute quadrangle maps.

Test excavations were performed at all sites within the project area with the exception of a small number of sites which could be determined to be noneligible for the National Register on the basis of survey data. The primary objective of the testing program was to produce sufficient data to make a determination of eligibility for the National Register of Historic Places for the property in question. The scope of work also called for the contractor to furnish a proposed plan for mitigation of adverse effect for sites deemed National Register eligible. The primary types of data that were sought during the testing phase were: (1) horizontal and vertical extent of the sites; (2) data which will establish the nature, density and cultural affiliation of the occupation; and (3) information useful for formulating a mitigation plan.

ESA's experience in testing a large number of sites in western and central Missouri (Schmits *et al.* 1981) has indicated the advantage of individually piece plotting tools, especially on smaller sites. The exact provenience of surface material often provides the best information regarding the boundaries of the sites and the delineation of concentrated areas of debris within site boundaries. One of the most practical methods for mapping small sites consists of mapping individual tools and site boundaries with an explorer alidade and a plane table. The location of individual artifacts and topographic features can be conveniently mapped.

Testing required the establishment of a properly located permanent datum marker with all collected materials, test units, etc., located and plotted on a plan and topographic map that clearly indicates the distance and directional orientation of the investigations to natural features.

One by one meter test excavation units were used to determine the vertical limits of sites and to obtain samples of diagnostic artifacts and organics suitable for dating. The number of test units which were placed at any given site was dependent upon site size, although the scope-of-work limited the number of test units at any given site to not more than 16 square meters. The test unit sampling strategy used during the Fort Scott project consisted of transect sampling at 20 meter intervals. This form of sampling involved locating a transect of test pits through areas of the site where concentrated cultural deposits were encountered. Testing normally terminated at a depth of 50 cm unless geomorphic evidence indicated the possible presence of deeply buried deposits. All tools recovered in each unit were plotted three-dimensionally. In addition, level summary forms were completed for each excavation level. Excavation levels consisted of the 10 cm levels below the plowzone. Data recorded for each level included the site number, excavation unit, depth, excavation techniques, description of soils and stratigraphy, artifacts recovered, and features present, with special samples and photographs taken. Profiles were recorded for each test unit. Recovered material was carefully bagged and recorded by level and unit. All test units were backfilled.

A third method of site testing that was employed was backhoe trenching. This technique was employed at sites where deposits could occur at substantial depths (generally, in excess of 1 m). Within these sites backhoe trenches were carefully placed and limited in nature in order not to destroy valuable sections of the site. Profiles of backhoe trenches were prepared and the location of trenches were recorded on site maps.

Geomorphic Field Investigations

The first step in the geomorphic investigations consisted of the development of a terrain analysis based on ASCS soil survey maps. These findings resulted in delineation of two geomorphic surfaces within the project area (uplands and lowlands). Based on this terrain analysis, it was possible to further differentiate the lowland into a modern alluvial floodplain and an older terrace surface along the Marmaton valley. The subsequent geomorphic field investigations were oriented toward refining this model and obtaining the necessary data for paleoecological reconstruction and the formulation of a preliminary alluvial chronology for the Marmaton valley. The geomorphic field investigations were focused on the areas where sites were located in the survey and which would provide data on both the upper and lower reaches of the Marmaton River. The geomorphological survey consisted of pedestrian reconnaissance coupled with the examination of subsurface exposures such as cut banks. Additional subsurface exposure was obtained by backhoe trenching and by augering.

Laboratory Analysis

Laboratory analysis was directed toward processing the recovered artifact collection for analysis, preservation and curation. This phase of work insured that the data gathered during field work was properly documented and inventoried so that it could be made available to future researchers. Laboratory procedures involved artifact clearing, sorting and labeling. All non-porous lithic material and metals were scrub-washed and dried. Prehistoric ceramics were carefully cleaned so that surface and decorations were not destroyed. Bone and shell were carefully washed. Friable specimens were first be allowed to air dry and subsequently cleaned.

Upon completion of cleaning, all materials were sorted and catalogued. All artifacts were placed in plastic zip loc bags or vials and labeled with the catalogue number, site number and provenience. General surface or excavation materials from a given excavation level or other discrete unit were sorted into basic artifact categories, assigned a catalogue number and placed together in an appropriately labeled container. The catalogue number, artifact type, provenience and quantity were entered in the catalogue. Diagnostic and piece plotted artifacts received an individual catalogue number and container.

During the analysis phase the artifact assemblages were classified into a series of techno-morphological groups and an inventory of the

assemblage was prepared for each of the sites. The primary goal of this analysis was toward formulating a classification from which the range of subsistence and settlement tasks conducted at each site could be inferred. The first step in this procedure was the subdivision of artifacts into groups defined by raw material, technological and morphological attributes. Raw material types include chipped stone, ground stone, bone or shell. Technological attributes specify tools that were made by particular manufacturing methods such as bifacially chipped and unifacially chipped stone tools. Morphological attributes include the overall size of the tool, its robustness, working edge shape and stylistic treatment (Montet-White 1963).

The use of prehistoric tools is largely dependent on the type of material from which it is made, its mode of manufacture, tensile and stress limitations and working edge shape. Equally important factors are the motor abilities and goals of the worker. Therefore, as each tool is classified according to its technomorphological properties it becomes possible to impose limits on the ranges of tasks that it may have performed. For example, bifacially chipped stone points can be used either as projectiles or as small knives. They probably could not have served well as plant food grinders or diggers, for which groundstone manos/metates and celts are better suited. Thus, a functional interpretation of bifacially chipped stone points is that they are suitable for hunting or light-duty cutting.

The relative contribution of activities performed at a site can be quantified easily by calculating the frequencies and percentages of tools assigned to a particular macrofunctional category. Once the complete tool kit is treated in this manner the artifact assemblage can be quantitatively assessed for the range and magnitude of subsistence activities represented. These data can be used to determine the intensity of site usage (e.g. special purpose extractive camps vs. base camps) and the types of settlement-subsistence activities performed.

VI. RESULTS OF THE SURVEY AND TESTING PROGRAM

The intensive archaeological and geomorphological investigations at the Fort Scott Lake Project area were designed to survey ten percent of the projected fee simple land or a total of 1725 acres. In actuality, a total of 1854 acres were surveyed. The areas surveyed consist of 22 tracts referred to as Survey Units 1-22. Table 2 lists these survey units, the acreage falling into the various terrain types, the legal description of the survey tracts and the U.S. Army Corps of Engineer Tract Numbers for the survey units.

The survey resulted in the location of 13 previously unrecorded sites. One previously recorded site (14B0204) was located in the areas surveyed. The 13 newly recorded sites have been officially designated as sites 14B0101-14B0108 and 14B0109-14B0111 and 14B0116. The location of the survey units and the sites located during the course of the survey are shown in Figure 5.

Eight of these sites required subsurface testing or mapping to determine their eligibility for the National Register. Three were determined to be non-eligible on the basis of the survey data. Three additional sites are located on the Oser property. While permitting pedestrian survey, the property tenant declined permission for testing. The following discussion presents the results of the intensive survey and testing program.

14B0101

This site consists of a light scatter of historic artifacts and a very light scatter of prehistoric materials situated on the T-1 terrace approximately 30 m north of the Marmaton River (Figure 6). A large gully is immediately to the west of the site. At the time of the investigations the site area was a plowed field with 100 percent surface visibility. Flagging of all surface materials indicated the presence of two distinct concentrated clusters of foundation stones referred to as Areas A and B. Historic and prehistoric artifacts were found in and between these foundation stone clusters.

Area A consists of a scatter of foundation stones 35 m in length and 10 m in width. Glass, china and crockery were present within the scatter. Area B consists of a scatter of foundation stones scattered over an area 35 m by 20 m just to the east of Area B. Very few artifacts of any kind were recovered from Area B. Surface collections were obtained from each area and one transect of three test units was located at 20 m intervals in Area A (Figure 6). The limited surface materials from Area B did not warrant testing. All test units were excavated to a depth of 50 cm below surface. These excavations indicate that both the historic and prehistoric components of the site are restricted to the plowzone. No evidence of a cultural midden was located and only 35 artifacts, mostly burnt rock and unworked stone,

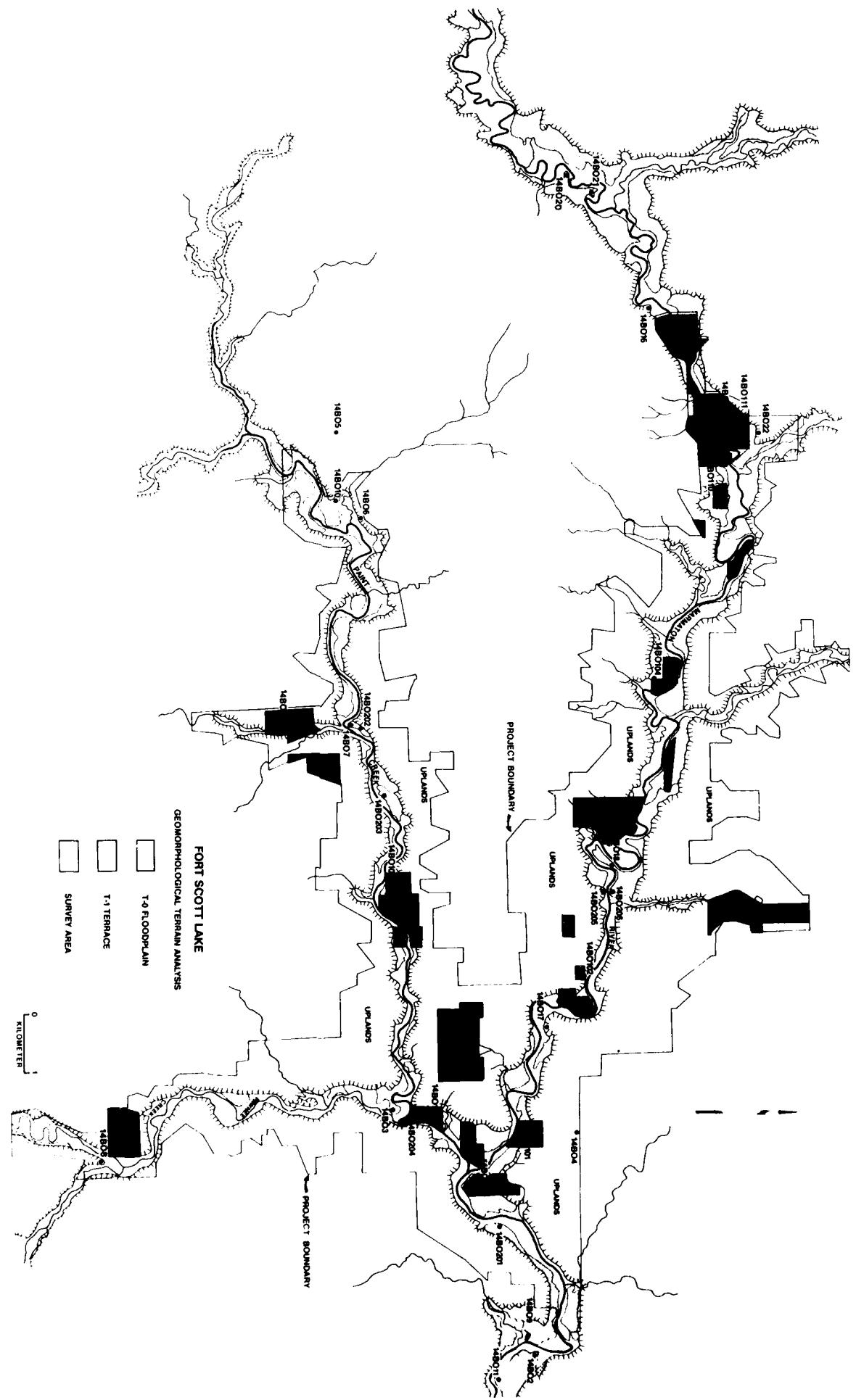


Figure 5. Geomorphological terrain map of the proposed Fort Scott Lake project area showing the location of survey units and known archaeological sites.

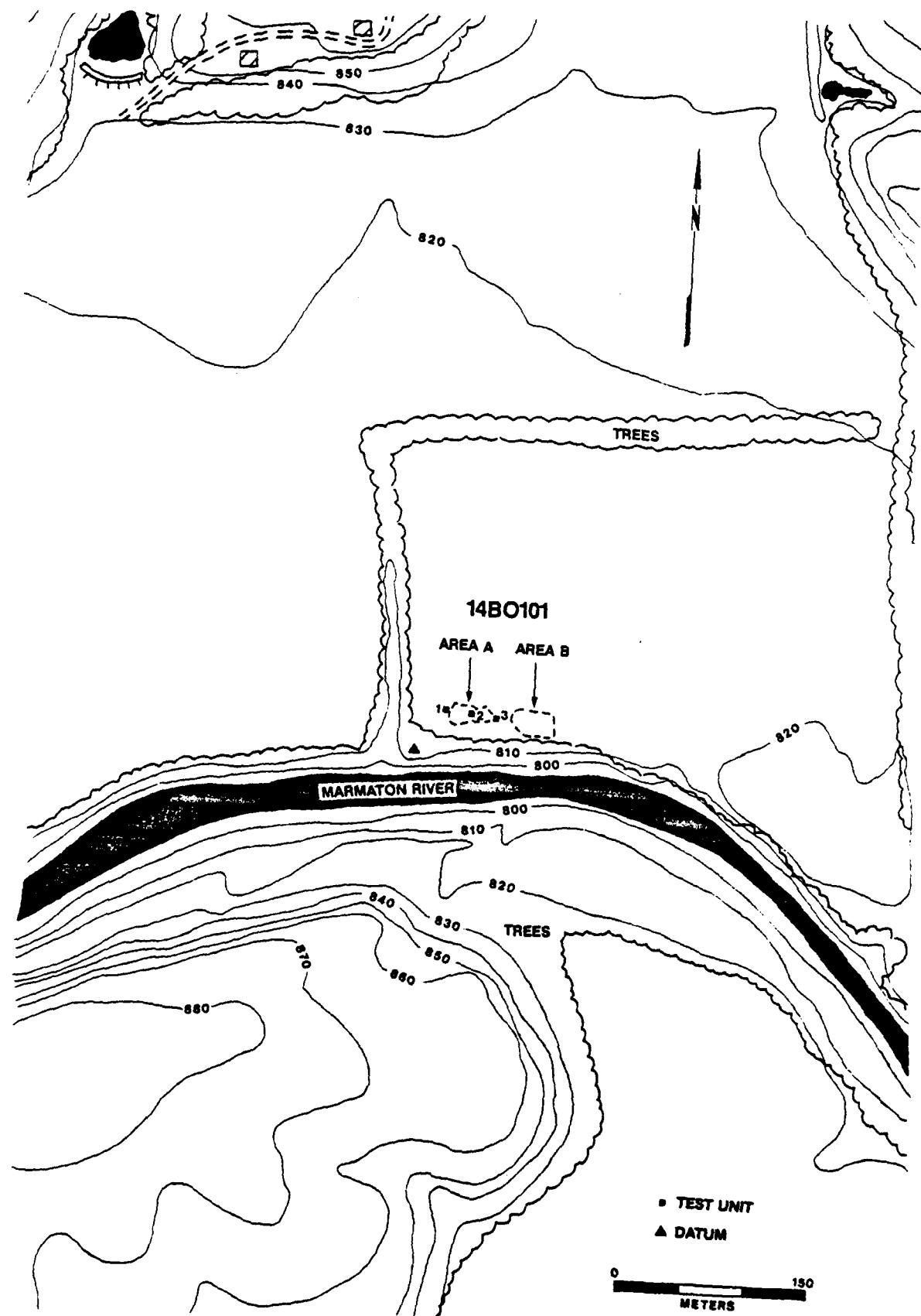


Figure 6. Location and plan view of excavations at 14BO101.

Table 2. Legal description and acreage of survey units.

SURVEY UNIT	ACREAGE			TOTAL	LEGAL DESCRIPTION	CORPS TRACT NO.
	T-0	T-1	UPLAND			
1	4	43	17	64	Sec. 5&8, T26S,R24E	319,243,240
2	4	23	20	47	Sec. 6, T26S,R24E	247
3	5	29		34	Sec. 29, T25S,R23E	90
4	45	120	82	247	Sec. 26, T25S,R22E	39,38,36,34
5	71	38	35	144	Sec. 27&34, T25S,R22E	39,47,32
6	7	21		28	Sec. 25, T25S,R22E	24
7			16	16	Sec. 25, T25S,R22E	25
8	17	14		31	Sec. 16&30, T25S,R22&23S	111
9	38	17		55	Sec. 29&32, T25S,R23E	101,104
10	17	46	108	171	Sec. 33, T25S,R23E	134,135
11			18	18	Sec. 2, T25S,R23E	410
12			12	12	Sec. 35, T25S,R23E	151,152
13	13	25	11	49	Sec. 1&35, T25S,R23E	151,152
14			198	198	Sec. 12, T26S,R23E	409
15	24	34		58	Sec. 7, T26S,R24E	251,252
16	11	23	10	44	Sec. 7, T26S,R24E	254
17	24	47	81	152	Sec. 10,11&14, T26S,R23E	280,296,297 302,313
18	11		101	112	Sec. 16&21, T26S,R23E	443
19			71	71	Sec. 16, T26S,R23E	443
20	8		100	108	Sec. 30, T26S,R24E	267,270
21	1		2	3	Sec. 20, T25S,R23E	85
22			175		Sec. 22&27, T25S,R23E	65,67
TOTAL		300	480	1057	1837	

were recovered from the test excavations. A general view of the test excavations is shown in Figure 7.

Stratigraphy

The T-1 terrace at 14B0101 is listed by Bell and Fortner (1981) as the Mason Soil series with the Verdigris soil present on the floodplain along the river. The soil profile at the site is as follows:

Ap 0-20 cm very dark gray (10YR3/1 wet) clayey silt, moderate subangular blocky structure;

B2t 20-60+ cm very dark grayish brown (10YR3/2, wet) clayey silt; moderate subangular blocky structure; occasional charcoal flecks present from 20-28 cm.



Figure 7. General view of the excavation at 14B0101 and 14B0102. General view to the west at 14B0101 (upper). General view to the east of Rock Midden A at 14B0102 (lower).

An A12 horizon was not present indicating that the site has undergone some erosion, possibly by scouring from flooding from the river.

Artifact Assemblage

A total of 61 artifacts were recovered during the surface survey and test units at 14B0101. Included are chipped stone tools, lithic manufacturing debris, burnt rock, unworked stone, unworked bone and historic artifacts. The distribution of this debris is presented in Table 3.

Chipped Stone Tools (n=4)

The chipped stone tools recovered from 14B0101 include one small triangular side-notched dart point with a straight base (Figure 8a), two edge-modified flakes and one edge-modified chunk. All of the chipped stone tools were from the surface. The edge-modified chunk appears to have been thermally altered.

Lithic Manufacturing Debris (n=5)

The lithic manufacturing debris recovered from 14B0101 was limited to five small flakes. No cores or chunks were present.

Burnt Rock, Unworked Stone and Burnt Sediment (n=28)

A total of 24 burnt cobbles, two pieces of unworked stone and two small fragments of bone were also recovered from 14B0101. The bone fragments are too small for identification, but one piece appears to be a tooth fragment.

Historic Artifacts (n=24)

Historic artifacts include glass, ceramics and metal fragments. The glass includes three fragments of light green bottle glass, representing at least two vessels, and one brown glass plate fragment. Ceramics include three fragments of a Willow Ware plate (Figure 8b), one piece of gray crockery and 13 fragments of White Ware plates and cups. Metal objects recovered include two square-cut nails (Figure 8c) and one piece of sheet metal.

Discussion and Recommendations

14B0101 is a multiple component site with historic and prehistoric occupations present. The limited prehistoric artifact assemblage consisting of one projectile point, two edge-modified flakes, one edge-modified chunk and five flakes indicates that the prehistoric occupation was extremely limited. The sole projectile point recovered from this site is interpreted as indicating a Plains Woodland period occupation.

The Historic occupation of 14B0101 is represented by the two foundation stone clusters and associated historic artifacts. Area A contains 21 of the 24 historic artifacts and probably represents the remains of a small house or storage shed. Area B contains only three artifacts and is probably a shed or small barn. The square-cut nails recovered from Area A were manufactured from 1830 to circa 1890, although curation and use of such nails continued into the 20th century (Bradley and Harder 1974).

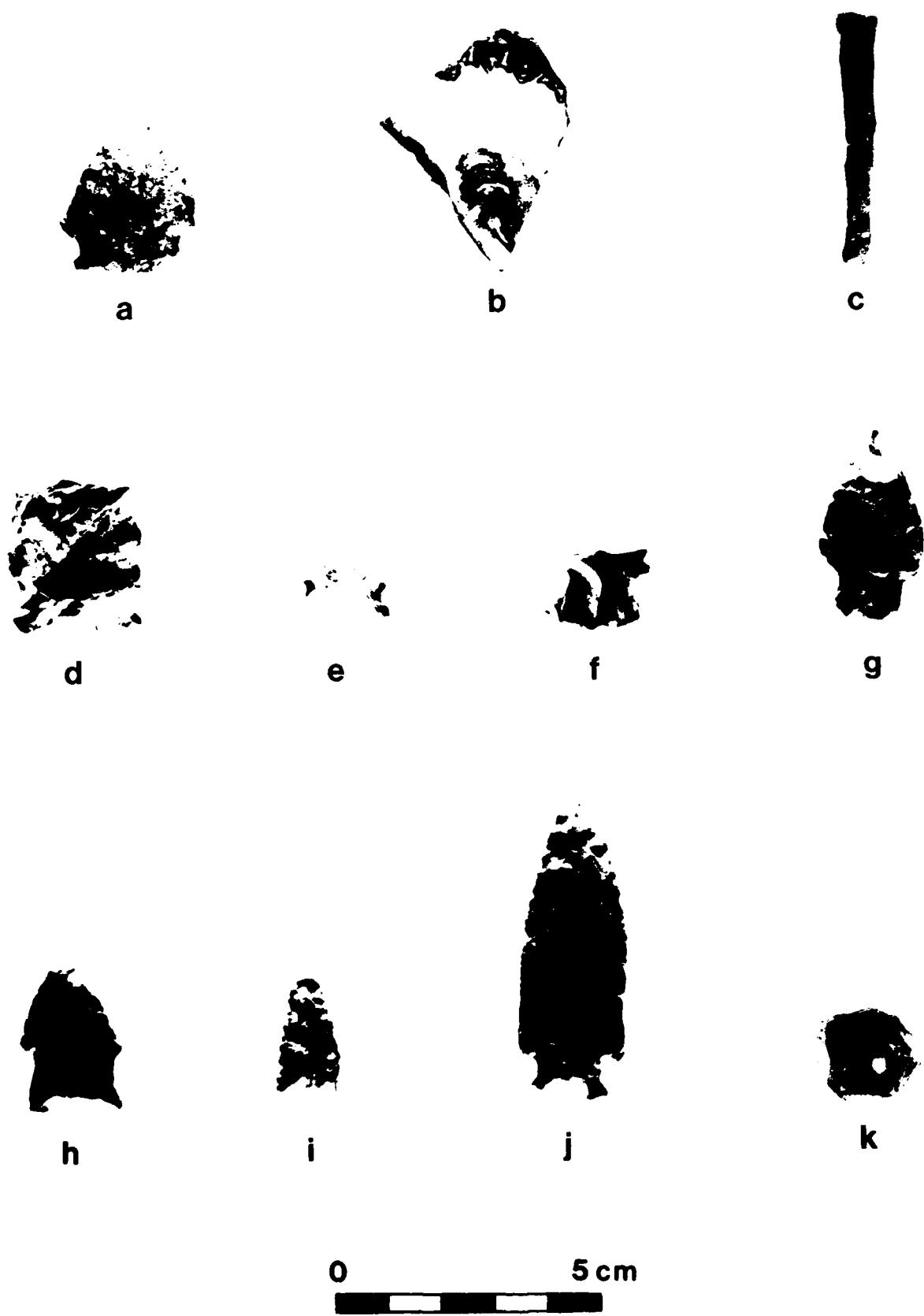


Figure 8. Artifacts from 14B0101, 14B0102 and 14B0103:
a-c, 14B0101; d-i, 14B0102; j-k, 14B0103.

Table 3. Artifact assemblage from 14B0101.

	AREA A	AREA B	SURFACE GENERAL	TEST	TEST	TEST	SITE
				UNIT 1	UNIT 2	UNIT 3	TOTAL
CHIPPED STONE TOOLS							
Projectile Point			1				1
Edge-Modified Flakes	1		1				2
Edge-Modified Chunks			1				1
Total		1	3				4
LITHIC MANUFACTURING							
DEBRIS							
Flakes			4		1		5
Total			4		1		5
BURNT ROCK							
UNWORKED STONE							
UNWORKED BONE							
Total			2	13	9		24
HISTORIC ARTIFACTS							
Metal		1		1		1	3
Glass	2	1		1			4
Ceramics	8	1	3	4		1	17
Total	10	3	3	6	0	2	24
TOTAL	11	3	12	21	10	4	61

A search of historical documents, including General Land Office survey plats, county plat books and historic atlases available for Bourbon County, indicates that this tract of land was first patented in 1860 by Isaac Mills. J. D. Mills deeded the property to J. A. Collins in 1904 who then deeded it to Cornelius Ream in 1908. The 1920 atlas shows F. Findenberger as owner of this property. None of the historic documents indicate the presence of a structure at the location of 14B0101. The lack of historic documentation indicating the presence of a house at this location, coupled with the small size and limited artifact content may indicate that these remains represent small out-buildings or sheds. The square-cut nails and ceramics indicate that these structures probably date to the late 19th century.

An alternative interpretation could be that 14B0101 represents a single component Historic Aboriginal occupation dating prior to Euro-American settlement of the area. However, this is not likely since the dart point from the site indicates a much greater age. Furthermore, Willow Ware china dates to the late 19th century. Thus, it is not likely that the combination of these artifacts has resulted from a single occupation.

14B0101 is located only about a km south of the Old Town of Marmaton which flourished in the early 1860s. Various historic records indicate the presence of a mill at Marmaton. However Andreas (1883) indicates that this mill was located within the city limits of Marmaton. It is not unlikely that 14B0101 represents a small residence dating to the 1860's. However, the small size of the site, the limited artifact content and surficial nature of this site limits the amount of information available from the site. Consequently, nomination of the site to the National Register of Historic Places is not recommended.

14B0102

14B0102 is a small upland site located on a low bluff just north of the Marmaton River (Figure 9). The site consists of a large, light to moderate lithic scatter and two distinct burnt rock middens. At the time of the survey and testing, the site was located in the northeast corner of a freshly plowed field which provided excellent visibility. An intermittent draw is located to the west of the site.

The two burnt limestone scatters were designated as Rock Middens A and B. The maximum site area is about 95 m in length (north-south) and 94 m in width (east-west), although cultural debris is concentrated in an area 50 m by 30 m at the northern end of the site (Figure 9). Test Unit 1 was located near the eastern end of this concentration, Test Unit 2 in Rock Midden A and Test Unit 3 near the western end. All three test units were taken to a depth of 50 cm. A total of nine artifacts came from Test Unit 1, 29 from Test Unit 2 and eight from Test Unit 3. The material from the test units principally consists of lithic manufacturing debris, although one edge-modified flake was recovered from each unit.

Rock Midden A was a subrectangular shaped scatter of burnt limestone cobbles 16 m in length by 12 m in width. Burnt Rock Midden B was circular and about 13 m in diameter. The surface of each midden consisted of a dense scatter of burnt limestone cobbles. Test Unit 2 in Rock Midden A indicated that the midden extended from the surface to a depth of 19 cm. The lower 10 cm of this midden was undisturbed by agricultural tillage. A general view of Rock Midden A is shown in Figure 7.

Two samples of burnt limestone were submitted to the University of Missouri TL Laboratory for thermoluminescence dating. The first (14B0102-TL1) was from a depth of 25 cm below the surface in Burnt Rock Midden A. The results indicated an age of 432 ± 60 years B.P. or A.D.

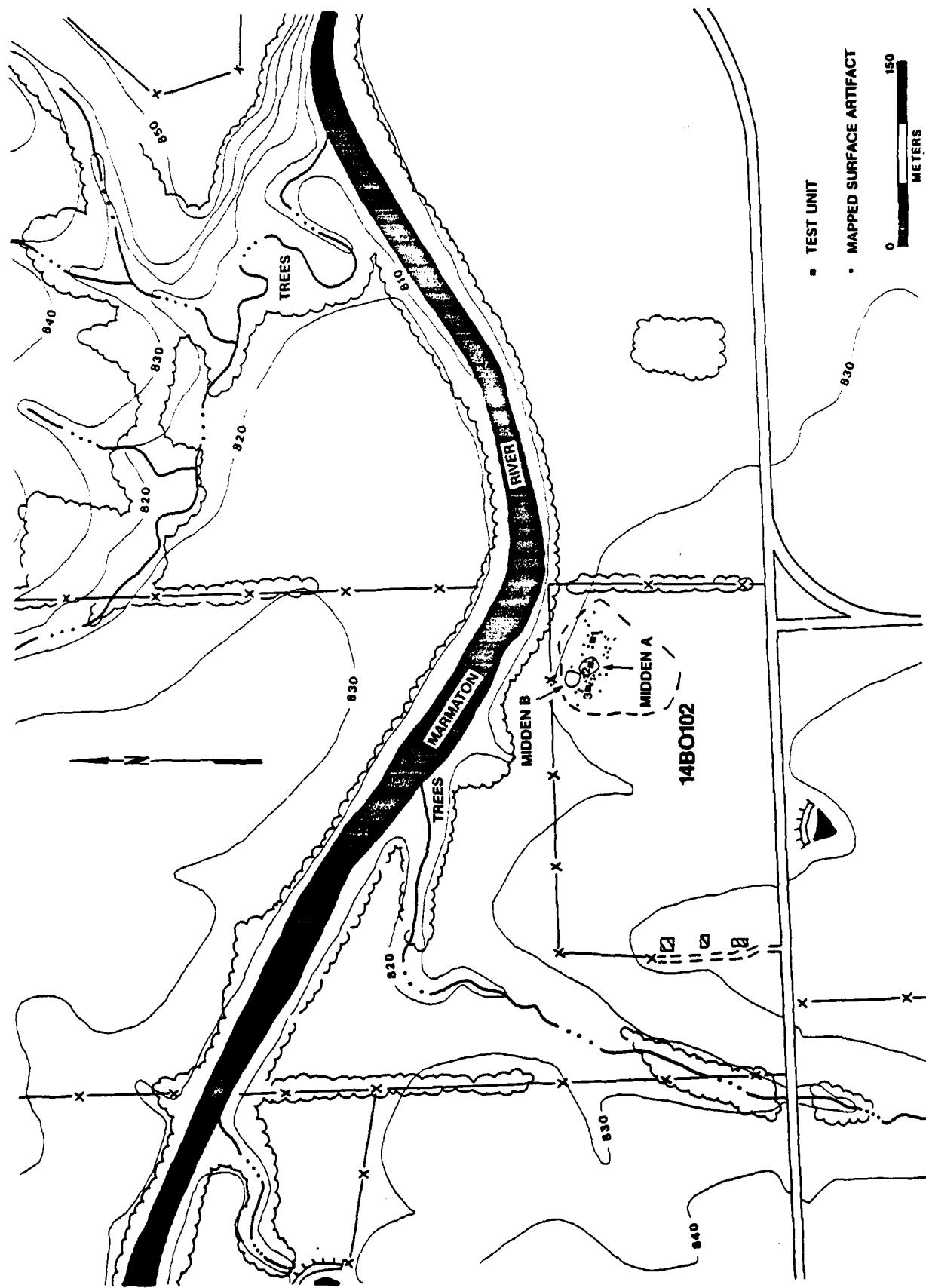


Figure 9. Location and general view of the investigations at 14BO102.

1550. The second sample (14BO102-TL2) was collected from a depth of 10-25 cm below the surface in Burnt Rock Midden B. An age of 350 ± 40 years B.P. or A.D. 1630 was indicated.

Stratigraphy

Bell and Fortner (1981) map the area of 14BO102 as the Dennis Soil Series. This series is formed from weathered shale on the foot slopes of uplands. However, the profile encountered at the site appears to be more similar to the Catoosa Series which has developed on weathered limestone. Limestone outcrops immediately to the north of the site indicating that the soil profile developed from a limestone regolith. The soil profile at the site is described as follows:

Ap 0-18 cm dark yellowish brown (10YR4/4 wet) silt loam with a weak granular structure.

B2t 18-50+ cm dark reddish brown clayey silt (5YR3/4 wet) with a well developed subangular blocky structure.

The soil profile appears to be deflated, lacking upper A1 or B1 soil horizons. This probably explains the relatively limited amount of data recovered from the test units. No charcoal or preserved organics were recovered from the test units.

Artifact Assemblage

A total of 303 artifacts were recovered from 14BO102 (Table 4). The artifact assemblage includes 257 artifacts from the surface and 46 from the test units. It should be noted that burnt rock was not systematically collected from the site, although a small sample was retained from Test Unit 2 and the surface. Included within the artifact assemblage are 58 chipped stone tools, 210 pieces of lithic manufacturing debris, seven groundstone tools, 14 burnt rocks, four unworked stones, 13 fragments of unworked shell, one piece of ground hematite and two historic artifacts. The chipped stone tools include 11 projectile points, four drills, three bifacial knives, one bifacial blank, ten biface fragments, one scraper and 28 edge-modified flakes.

Projectile Points (n=11)

Projectile points from the site include ten dart points and one small arrow point. Five dart points are sufficiently complete for study. All are stemmed and notched forms made from small, ovate and triangular preforms. Two are side-notched points made by placing shallow lateral notches near the base of triangular preforms (Figure 8d-e). One has a concave base and one has a straight base. The stemmed points were formed by corner-notching ovate to subtriangular preforms producing expanding stems with straight and convex bases (Figure 8f-h). The arrow point is a triangular, unnotched specimen with a slightly concave base (Figure 8i). Two of the projectile points appear to have been heated.

Table 4. Artifact assemblage from 14B0102.

	TEST UNIT 1	TEST UNIT 2	TEST UNIT 3	SURFACE	TOTAL
CHIPPED STONE TOOLS					
Projectile Points				11	11
Drills				4	4
Bifacial Knives				3	3
Bifacial Blanks				1	1
Biface Fragments				10	10
Scraper				1	1
Edge-Modified Flakes	1	1	1	25	28
Total	1	1	1	55	58
LITHIC MANUFACTURING DEBRIS					
Cores				8	8
Chunks				9	9
Flakes	4	7	1	117	129
Shatter	4		6	54	64
Total	8	7	7	188	210
GROUNDSTONE TOOLS					
Hammerstone				1	1
Total				1	1
BURNT ROCK	7			7	14
UNWORKED STONE	3			1	4
UNWORKED SHELL	11			2	13
MINERALS				1	1
HISTORIC ARTIFACTS					
Metal				1	1
Ceramics				1	1
Total				2	2
TOTAL	9	29	8	257	303

Drills (n=4)

Four incomplete drill sections were recovered from the site. One consists of a distal tip, two are sections of the bit and one is a base. The latter is not stemmed and is made from white chert.

Bifacial Knives (n=3)

Three bifacial knife fragments were recovered from the surface. One specimen consists of a short, broad triangular knife with shallow side notches for hafting. This implement has a lenticular cross-section with an alternate bevel indicating that the knife was resharpened. The second specimen consists of the proximal end of a knife with a slightly concave base. The third bifacial knife fragment consists of a midsection which exhibits attritional wear along both lateral edges. Only one of the bifacial knives has been thermally altered.

Bifacial Blanks (n=1)

One bifacial blank was recovered. This specimen consists of a subrectangular biface with a transverse fracture which has been heat treated.

Biface Fragments (n=10)

Ten biface fragments are too incomplete for classification. One specimen has been heat treated.

Scraper (n=1)

One end scraper was recovered from 14BO102. This scraper has been thermally altered as evidenced by heat fractures on the ventral surface of the tool.

Edge-Modified Flakes (n=28)

A total of 28 edge-modified flakes were recovered from the site. Three are from the test units and 25 are from the surface.

Lithic Manufacturing Debris (n=210)

Lithic manufacturing debris includes eight cores, nine chunks, 129 flakes and 64 pieces of shatter. The cores are all of unheated, tan chert. One exhibits hammer wear. Chunks, flakes and shatter principally appear to be of a similar material, although white, blue and olive colored cherts are present. Almost 90 percent of the lithic manufacturing debris was recovered from the surface.

Groundstone Tools (n=1)

One hammerstone made from a quartz cobble was recovered.

Burnt Rock and Unworked Stone (n=18)

Due to the large amount of burnt rock and unworked stone on the site, these classes of debris were not systematically collected. These 18 pieces include a sample kept from Test Unit 2 in Rock Midden A and a sample from the surface.

Unworked Shell (n=13)

Shell from the site included 13 small fragments of freshwater mussel. These were mainly recovered from Test Unit 2 in Rock Midden A.

The fragments are small and probably not identifiable to a specific level.

• Minerals (n=1)

Minerals from the site include one piece of ground hematite.

Historic Artifacts (n=2)

One metal staple and one small piece of earthen ware ceramics were found on 14B0102. Light densities of Historic materials are not uncommon on agricultural fields in the Fort Scott area. These specimens are insufficient evidence for the presence of a historic component at the site.

Discussion and Recommendations

The projectile point assemblage from 14B0102 predominately consists of side-notched and stemmed dart points which have a long temporal span. The co-occurrence of a triangular arrow point with dart points suggests a Plains Woodland cultural affiliation. However, a number of the points are similar to those found on Archaic sites in eastern Kansas. Charcoal suitable for dating was not recovered from the site. However, thermoluminescence dates from the burnt rock recovered from the site indicate an age of 350-430 B.P. These dates are clearly in conflict with the age suggested by the majority of the artifacts. The site most likely represents a Plains Archaic or Plains Woodland occupation. The burnt rock middens at the site are close to the surface and the late thermoluminescence dates obtained may have resulted from post occupational events such as prairie fires.

Based on the frequency of tool types from 14B0102, the types of activities which may be inferred to have taken place include: hunting and butchering, light-duty cutting and scraping, drilling and perforating, chipped stone tool manufacture, maintenance and modification, hide preparation and food preparation. The absence of tools associated with plant food collection or processing is noteworthy. These diverse forms of activity being conducted at the same locale in association with dense burnt rock middens suggests that 14B0102 represents a base camp. The location of mussel shell within the burnt rock middens may indicate that these features functioned in the cooking of mussel shell.

14B0102 has the potential to contribute considerable information on the nature of Archaic or Plains Woodland adaptations including the use of burnt rock middens in the Fort Scott area. Therefore, the site is considered eligible for the National Register of Historic Places. If the Fort Scott Lake Project is funded for construction, the recommended mitigation would be preservation. If this is not feasible, an archaeological data recovery program should be initiated. This data recovery program should include small block excavations centered on the two burnt rock middens to provide information regarding their construction and use. Samples for radiometric or thermal luminescence dating should be collected. In conjunction with the hand excavations the entire site should be surface collected. Mechanical stripping should be conducted to locate possible features.

This site consists of a light lithic scatter extending over an undulating T-1 terrace slope just west of a meander of the Marmaton River and north of an intermittent stream channel (Figure 10). At the time of the investigations, the site was an open field with a surface of disced corn stubble. A recent rain had occurred and surface visibility was approximately 80 percent.

The site extends 200 m north to south and is approximately 40 m in width. Intensive pedestrian survey indicated the presence of three concentrated lithic scatters which were designated as Areas A, B and C. Area A consists of a light lithic scatter on the southern edge of the site covering an area of 55 by 20 m. Area B consists of a light to moderate lithic scatter extending over the central portion of the site which was approximately 80 m north-south and 45 m east-west. Area C was an oval, light lithic scatter on the northern edge of the site, approximately 50 by 30 m in extent. Two test unit transects were laid out to crosscut each defined lithic scatter. Two test units were located in Area A, three in Area B and one in Area C (Figure 10). All test units were excavated to a depth of at least 50 cm below surface. A general view of the site and test excavations is shown in Figure 11.

The results of the testing indicate that the cultural materials in Area A are located primarily in the plowzone. Area B contains intact subplowzone cultural debris to a maximum depth of 50 cm below surface. This midden consists of burnt earth, burnt sandstone, charcoal flecks, chert flakes and bone noted from the surface to 50 cm below surface. The densest midden was located from 30 to 40 cm below surface. Test Unit 6, located in Area C, indicated the presence of a light scatter of cultural materials restricted to the plowzone. This portion of the site is topographically the highest terrain within the site and is probably the least deflated. The test excavations indicate that the midden present in Area B thins out to the north and south toward Areas A and C. Test Unit 4 located in the center of Area B encountered the densest cultural midden. A general view of the site and test excavations is shown in Figure 11.

Stratigraphy

14B0103 is located on a gentle east sloping T-1 terrace just upstream from the confluence of an intermittent stream and the Marmaton River. The Bourbon County Soil Survey lists the area of 14B0103 as the Mason soil which is formed on stream terraces. The soil profile at the site consisted of three horizons:

Ap 0-13 cm dark brown (10YR3/3 wet) silt with a crumb structure;

A12 13-24 cm very dark grayish brown (10YR3/2 wet) clayey silt with a moderately developed subangular blocky structure;

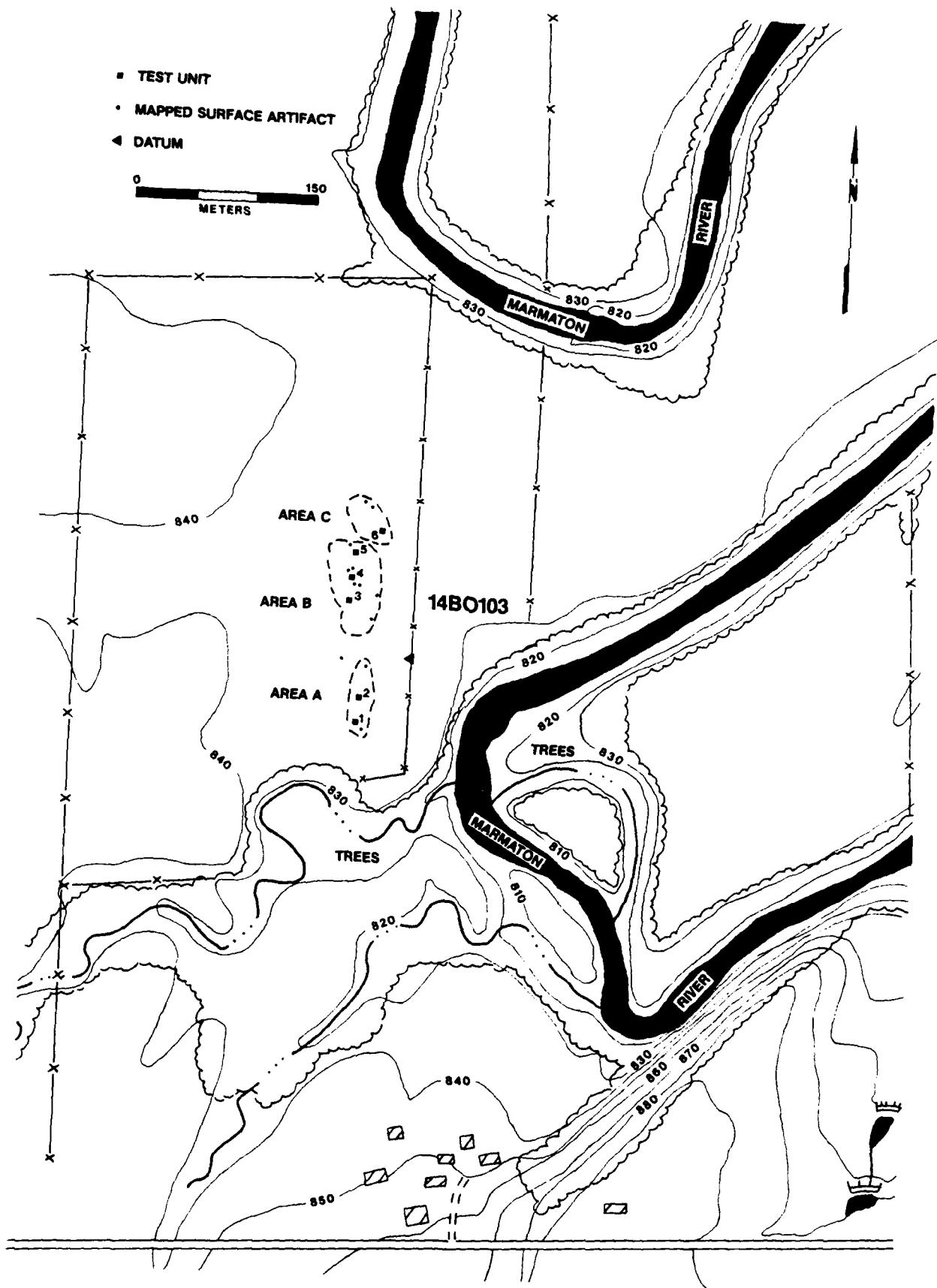


Figure 10. Location and plan view of excavations at 14BO103.



Figure 11. General view of excavations at 14B0103 and 14B0104. View to the north at 14B0103 (upper). View to the northeast at 14B0104 showing the T-1 terrace scarp (lower).

B2t 24-50+ cm very dark grayish brown (10YR3/2) with a dark reddish brown (5YR3/4) mottle; silty clay with well developed subangular blocky structure.

This profile was consistent across the site, although the A1 horizon was missing in Test Unit 6 in Area C. Additionally, a moderate scatter of cultural material, consisting of burnt and unburnt rock debris and occasional scatters of burnt clay and charcoal, were present in Test Unit 4 in Area B. A light scatter of charcoal, burnt clay and bone were present from 20-28 cm in Test Unit 5, in the northernmost Area B test unit.

Artifact Assemblage

A total of 547 artifacts were recovered from 14B0103. A total of 285 were from the test units and 262 pieces were from the surface. Included are ceramics, chipped stone tools, lithic manufacturing debris, groundstone tools, minerals, burnt rock, unworked stone, burnt sediment, unworked bone and historic artifacts. The distribution of this material is presented in Table 5.

Ceramics (n=1)

A small (less than 1 cm in diameter) grit tempered body sherd was recovered from Area C. Other than indicating the probable presence of a Plains Woodland occupation, little else can be deduced from this small fragment.

Projectile Points (n=2)

Projectile points include a medium sized stemmed dart point (Figure 8j) which has a slightly expanding stem and convex base. A distal fragment of a triangular arrow point is also present. The dart point has been thermally altered and was manufactured from a triangular preform flake. The dart point was recovered from Area A and the arrow point from Area C.

Bifacial Blanks (n=2)

Two bifacial blanks were recovered. One is a heavy-duty biface from Area A and the second is a light-duty fragment from Area B which has been heat treated.

Biface Fragments (n=6)

Six biface fragments were recovered including four from Area B and two from Area C.

Scraper (n=1)

A thumbnail scraper made from glass was recovered from just outside Area A (Figure 8k). The glass is transparent with a slightly green tint and an air bubble visable in the center. Retouch is present along the entire perimeter of the scraper.

Table 5. Artifact assemblage from 14BO103.

	AREA A		AREA B		AREA C		GEN	SITE
	TEST	SURF	TEST	SURF	TEST	SURF		
	UNIT	UNIT	UNIT	UNIT	TEST	SURF		TOTAL
CERAMICS	1						1	
CHIPPED STONE TOOLS								
Projectile Points	1				1			2
Bifacial Blanks	1		1					2
Biface Fragments			4		2			6
Scrapers							1	1
Edge-Modified Flakes		3		2			1	6
Total	2		8		5		2	17
LITHIC MANUFACTURING								
DEBRIS								
Cores				1			1	2
Chunks			3	5	2			10
Flakes	15	3	88	45	31	1	25	208
Shatter	2		36	17	23		9	87
Total	17	3	127	68	56	1	35	307
GROUNDSTONE TOOLS								
Manos				1				1
Total				1				1
MINERALS					1			1
BURNT ROCK		1		151	2			154
UNWORKED STONE		4	3	10				17
BURNT SEDIMENT				1			1	2
UNWORKED BONE				45				45
HISTORIC ARTIFACTS								
Glass		1						1
Brick							1	1
Total		1					1	2
TOTAL	21	8	139	276	63	1	39	547

Edge-Modified Flakes (n=6)

Edge-modified flakes include three from Area B, two from Area C and one from the general surface collection.

Manufacturing Debris (n=307)

Lithic manufacturing debris accounts for 56 percent of the artifacts from the site. Included are two cores, ten chunks, 208 flakes and 87 pieces of shatter. The majority of this material was recovered from Area B, although a substantial amount was recovered from Area C.

Groundstone Tools (n=1)

A large, water-worn quartzite mano was recovered from Area B. One end of the mano has been broken and the other exhibits traces of battering indicating secondary use as a hammerstone.

Minerals (n=1)

Minerals from the site include one piece of hematite from a test unit in Area B.

Burnt Rock and Unworked Stone (n=171)

A total of 171 burnt rocks and unworked stones were recovered from the site. The majority of this material was recovered from Test Unit 4.

Unworked Bone (n=44)

Unworked animal bone includes a total of 45 fragments. The majority of these were recovered from Test Unit 4 in Area B.

Historic Artifacts (n=2)

Historic artifacts include one piece of glass from Area A and one brick from the general site surface.

Discussion and Recommendations

14B0103 is a multicomponent site consisting of three distinct lithic scatters. Based on the presence of one medium-sized dart point, one arrow point and one small body sherd, Areas A and C are interpreted to represent Plains Woodland period occupations. The recovery of a glass thumbnail scraper between Areas A and B indicates a second component which probably dates to the Proto-Historic or Historic Aboriginal period. No temporally diagnostic materials were found in Area B, although 76 percent of the entire site assemblage was recovered from this area. The limited artifact content recovered from the Areas A and C and the lack of a preserved midden formation within them indicates that they represent small, limited use camp sites. Activities associated with hunting and butchering, light-duty cutting and scraping and chipped stone manufacture and maintenance are inferred to have taken place at these locales.

As noted, Area B contains the most concentrated deposits at the site. Sixty-seven percent of the artifacts from Area B were found during subsurface investigations. The three test units in Area B produced evidence of a cultural midden consisting of charcoal flecks, burnt rock, bone and lithic debris to a depth of 50 cm below surface.

A total of 182 pieces of debris were recovered from subplowzone levels in Test Unit 4, with heaviest midden deposit located between 30 and 40 cm below surface. Since the cultural deposits in the center of Area B are buried, a surface sample representative of the full range of artifact types from this occupation was not obtained. The dense midden present in Area B indicates a fairly intensive occupation, such as a base camp. The temporal position of the Area B occupation cannot be determined with certainty. However, the relationship of Area B to Areas A and C suggests that it is probably related to the Plains Woodland or to the Proto-Historic or Historic Aboriginal occupation.

The investigations conducted at 23B0103 indicate that the cultural materials located in Areas A and C are deflated and located in the plowzone limiting the information that can be recovered from these areas. A dense, intact subplowzone cultural midden was located in Area B. Bone preservation within this midden is generally good and features such as hearths, pits or post molds are likely present. The exact temporal cultural affiliation of this midden, however, has not been precisely determined.

Based on the presence of the thick cultural midden located in Area B, 14B0103 is recommended for nomination to the National Register of Historic Places. If the Fort Scott Lake Project is approved for construction, data recovery investigations should be conducted in Area B unless the site can be preserved. An appropriate cost effective mitigative strategy for this site would include a small hand dug block excavation located in the center of Area B in conjunction with mechanical stripping of adjacent areas to recover possible features. Systematic collection of samples suitable for radiometric or thermal luminescence dating should be conducted.

14B0104

This site consists of a light lithic scatter eroding from the scarp of the T-1 terrace located approximately 175 m west of the Marmaton River and just north of an intermittent stream (Figure 12). At the time the investigations were conducted, the site was located in an open field of disced corn stubble. Recent rains had occurred and the surface visibility was approximately 70 percent. Intensive survey indicated that artifacts were restricted to the southern and western slopes of the terrace, indicating that the site was eroding out of the truncated terrace face. A total of 35 artifacts were recovered from the surface investigations.

One test unit transect was laid out perpendicular to the terrace scarp in order to determine if cultural deposits were buried below the terrace surface. Five one by one m test pits were excavated at 20 m intervals along this transect. All test units were excavated to a depth of at least 80 cm below surface. These test units revealed the presence of a buried cultural deposit consisting of burnt earth, charcoal flecks, burnt rock and bone fragments. This midden was noted in Test Units 1, 2 and 3 and was most concentrated between 30 and 70 cm below surface. To

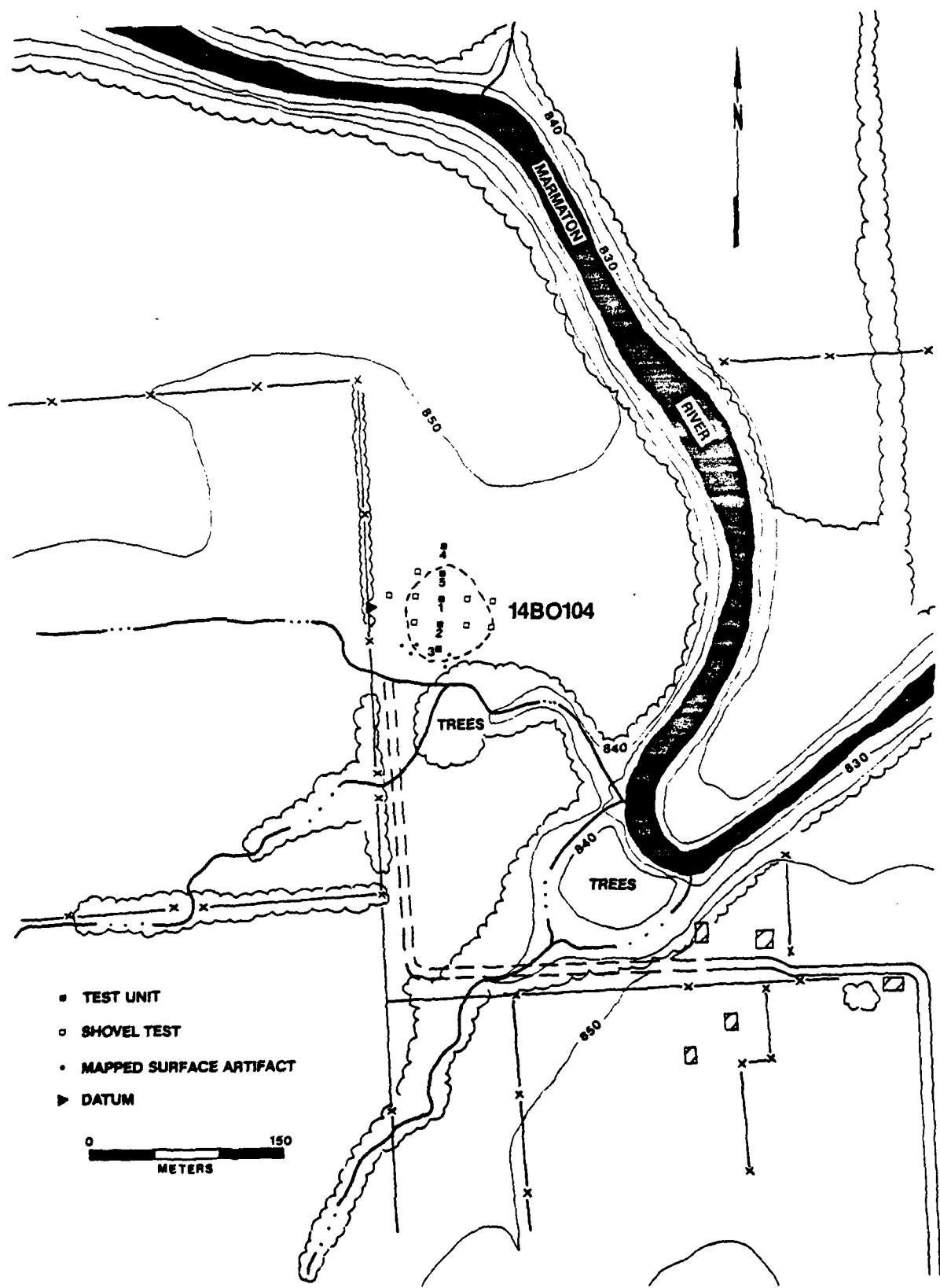


Figure 12. Location and plan view of excavations at 14BO104.

further determine the site's boundaries, three transects of shovel tests were excavated at 20 m intervals. A total of eight 50 by 50 cm shovel tests were excavated to a depth of 50 cm. The results of test units and shovel tests indicate that the buried site extends for a distance of 60 m north to south and 65 m east to west (Figure 12). A general view of the test excavations at the site is shown in Figure 11.

Stratigraphy

14B0104 is located in the T-1 terrace fill. The profile at the site is described as follows:

Ap - 0-13 cm very dark grayish brown (10YR3/2 wet) clayey silt, crumb structure;

A1 - 13-28 very dark gray (10YR3/1 wet) clayey silt, weakly developed subangular blocky structure;

B2 - 28-80+ very dark gray (10YR3/1 wet) clayey silt, moderately developed subangular blocky structure.

Test Unit 3 had a light scatter of cultural debris from 28-35 cm consisting of occasional charcoal and burnt clay. Test Unit 2 had a light scatter of cultural material from 40-80 cm, primarily burnt rock and occasional flecks of burnt bone. Test Unit 1 had a light scatter of burnt clay and burnt bone from 15-30 cm. Test Unit 5 had a light scatter of burnt bone in the upper 20 cm of the profile. Test Unit 4 had an occasional scatter of material from 20-30 cm below the surface.

Artifact Assemblage

A total of 117 artifacts was recovered from the site. Seventy percent of this material was recovered from the subsurface investigations. Artifacts recovered include chipped stone tools, lithic manufacturing debris, groundstone tools, burnt rock, unworked stone, unworked bone and unworked shell (Table 6).

Chipped Stone Tools (n=9)

The chipped stone tools recovered from 14B0104 consist of seven edge-modified flakes and two edge-modified chunks. Five of the edge-modified flakes were located on the southern slope of the terrace where the cultural deposit was eroding out of the terrace fill. One edge-modified flake and one of the edge-modified chunks were recovered from the test excavations near the southern slope. The balance of one edge-modified flake and one edge-modified chunk were from the surface.

Lithic Manufacturing Debris (n=29)

Lithic manufacturing debris recovered from 14B0104 include one chunk, 21 flakes and seven pieces of shatter. Seventy-two percent of this debris was recovered from the surface, primarily along the southern

Table 6. Artifact assemblage from 14B0104.

	SURFACE TOTAL	TEST UNIT 1	TEST UNIT 2	TEST UNIT 3	SHOVEL TESTS	SITE TOTAL
CHIPPED STONE TOOLS						
Edge-Modified Flakes	6			1		7
Edge-Modified Chunks	1				1	2
Total	7			1	1	9
LITHIC MANUFACTURING						
DEBRIS						
Chunks	1					1
Flakes	14			4	3	21
Shatter	6			1		7
Total	21			5	3	29
GROUNDSTONE TOOLS						
Metates				1		1
Total					1	
BURNT ROCK	4	2	20	10	7	43
UNWORKED STONE		1	2		1	4
BURNT SEDIMENT		1	7	2		10
UNWORKED BONE	2		15	2		20
UNWORKED SHELL	1					1
TOTAL	35	4	45	20	12	117

and western terrace slopes. The balance of the lithic manufacturing debris was found in Test Unit 3 and one of the shovel tests.

Groundstone (n=1)

One fragment of a metate was found in Test Unit 2 at 60 cm below surface. One surface of this specimen has three narrow parallel grooves indicating secondary usage as an abrader. This groundstone fragment was manufactured from a reddish brown fine grained sandstone.

Burnt Rock and Unworked Stone (n=57)

A considerable amount of burnt rock and unworked stone was recovered from 14B0104. The majority of this material was from Test Units 2 and 3.

Unworked Bone and Shell (n=21)

Unworked bone was primarily recovered from the subsurface investigations, especially Test Unit 3. Only one fresh water mussel shell fragment was found on 14B0104 and this was a surface find.

Discussion and Recommendations

14B0104 is a shallowly buried cultural midden located in the T-1 terrace fill. The cultural deposit principally consists of burnt rock and unworked bone with occasional lithic debris present. This deposit is concentrated from 30 to 80 cm below surface and extends over a horizontal area 60 by 65 m. Test excavations indicate that this midden is most concentrated in the vicinity of Test Units 2 and 3. Based on the size and thickness of the deposit, this site probably represents an intensive occupation such as a base camp or other form of habitation site. Diagnostic artifacts were not recovered and the cultural affiliation of the site cannot be determined. However, the location of the site in the upper T-1 terrace fill is suggestive of a Late Archaic or Plains Woodland time period.

The thick midden coupled with good bone preservation indicate that this site has a high potential to yield significant data on subsistence patterns and prehistory of the Marmaton valley. Based on these factors, 14B0104 is recommended for nomination to the National Register of Historic Places. If the Fort Scott Lake Project is funded for construction, data recovery investigations should be conducted at this site. The most efficient data recovery strategy would include a block excavation located in the vicinity of Test Units 2 and 3 coupled with controlled mechanical stripping of adjacent areas of the site to reveal the location of associated features. Systematic backhoe trenching is also recommended to determine if more deeply buried components are present.

14B0105

This site consists of a very light lithic scatter situated on a colluvial side slope located near the headwaters of an intermittent stream approximately 220 m southeast of the Marmaton River (Figure 5). The site area had been cultivated and at the time of the survey of the field was in disced corn stubble with a surface visibility of approximately 70 percent. This site was determined to lie just outside the project boundaries and further investigation was not necessary.

Artifact Assemblage

One projectile point and lithic manufacturing debris were the only artifacts recovered during the survey which located 14B0105. The projectile point is a medium sized, triangular corner-notched dart point. This specimen has a fractured base which was probably straight to slightly concave. The lithic manufacturing debris consists of 20 pieces of shatter.

Discussion and Recommendations

The artifact assemblage recovered from 14B0105 is extremely limited and the site probably represents a specialized limited use camp. The sole, fragmentary projectile point is insufficient for determining the cultural affiliation of this site, but it is probably related to the Plains Woodland or Archaic periods. Recent agricultural terracing in the site area has likely disturbed the sites subsurface integrity. The small artifact inventory coupled with the disturbed nature of the site area limits the information potential available at 14B0105. Based on these considerations 14B0105 is not eligible for nomination to the National Register of Historic Places.

14B0106

This site consists of a large multiple component occupation located on the T-1 terrace on the north bank of the Marmaton River (Figure 13). The site has a maximum width of 90 m on its east-west axis and extends for a distance of 440 m. Intensive flagging of all surface artifacts indicated that the site consisted of three distinct lithic clusters designated as Areas A, B and C. Area A consists of a light to moderate lithic scatter located along a meander scar (Figure 13). The Area A lithic scatter extends approximately 300 m north-south and 70 m east-west. A large burnt rock midden is located on the southern edge of this area covering an area approximately 20 by 35 m. Fifty-one individual tools were located and mapped in Area A. Two test unit transects were located to cross-cut the densest areas of artifact concentrations within this area.

A total of ten one by one m test units were excavated. Additionally, three backhoe trenches were excavated to examine the soil stratigraphy and to determine if buried components were present. A general view of the excavations in progress is shown in Figure 14. The ten test units in Area A indicate the presence of cultural materials to a depth of 40 cm below surface. A very light scatter of burnt earth, charcoal flecks, flakes and occasional bone was observed below the plowzone between 20 and 40 cm below surface. This debris extended to a depth of 50 cm in Test Unit 6. Test Unit 2 was located in the burnt rock midden near the southern edge of Area A. The midden consisted of a thick, scatter of burnt limestone cobble with a maximum length of 36 m and a subtriangular plan form. The profile exposed by Test Unit 2 indicated that the midden extended from the surface to a depth of 30 cm (Figure 14). The lower 20 cm of this deposit had not been disturbed by agricultural tillage.

Area B consists of a light lithic scatter located to the north of Area A (Figure 13). This lithic scatter covers an area of approximately 40 by 50 m. Due to the thin distribution of cultural materials, Area B did not warrant subsurface testing.

Area C consisted of an extensive scatter of limestone foundation cobbles with occasional pieces of glass, china, and crockery which

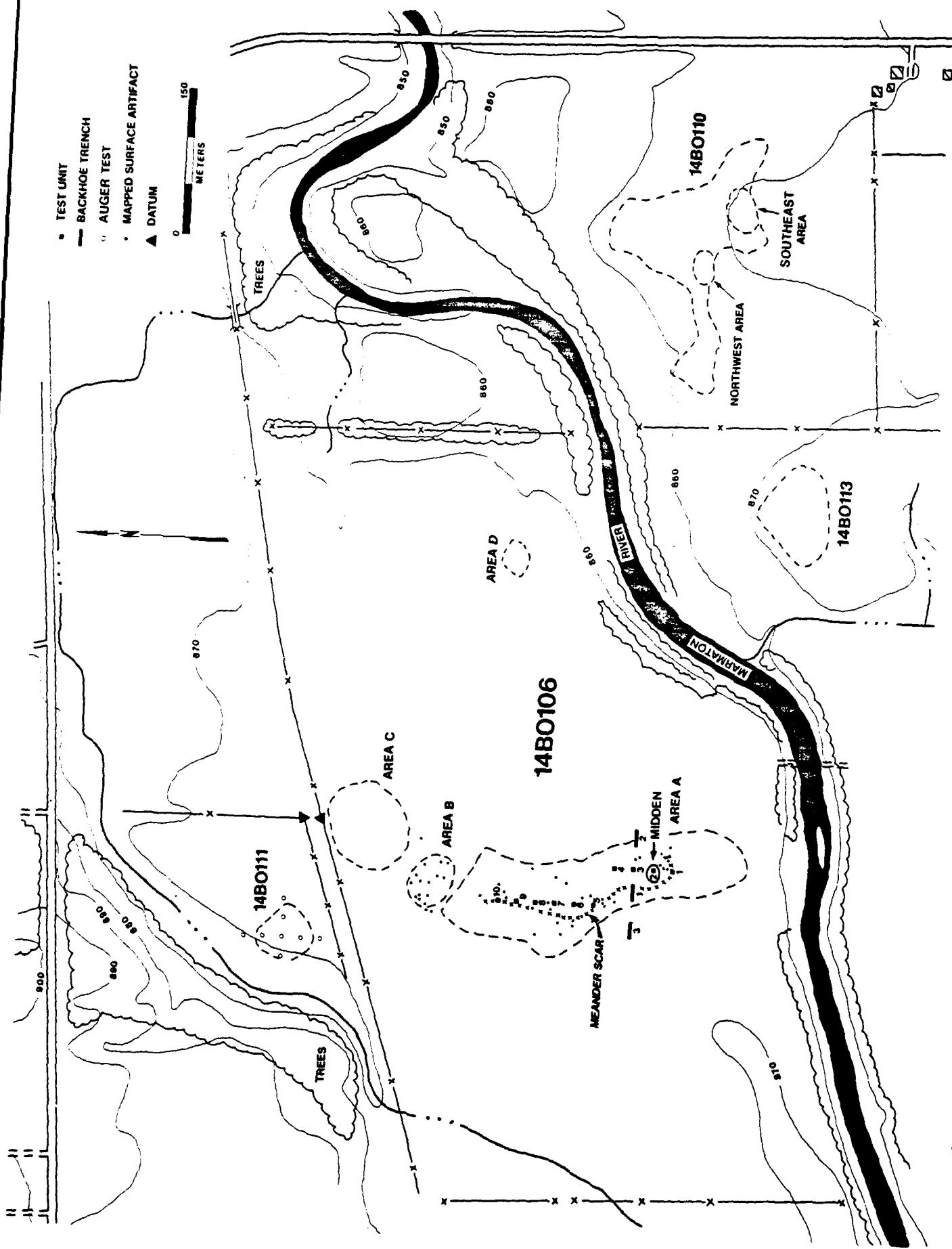


Figure 13. Location and plan view of investigations at 14BO106, 14BO110, 14BO111 and 14BO113.



Figure 14. General views of excavations at 14B0106. General view of backhoe trenching and excavation in progress (upper). Profile of Test Unit 2 showing burnt rock midden in Area A (lower).

extends over an area of 50 by 100 m. Four artifacts including a tobacco pipe fragment were individually mapped. Area C comprises the historic component of 14B0106. The limited remains encountered in Area C did not warrant subsurface testing. Area D consists of a light lithic scatter located to the west of the site proper. The limited cultural debris encountered at this locality did not warrant testing.

A sample of burnt limestone recovered from a depth of 30 cm in the burnt rock midden in Area A was submitted to the University of Missouri TL Laboratory. A date of 100±16 years B.P. or A.D. 1885 was obtained for the sample. This date is clearly in conflict with the age suggested by the artifact assemblage.

Stratigraphy

The soil profile at 14B0106 was examined in detail during the course of the geomorphological investigations. The results of this work indicate that the site is situated on the highest point of the T-1 terrace. The upper T-1 surface of the site is generally level with undulations and some shallow depressional areas. Just to the west of the site, the T-1 terrace exhibits a series of scrolls and meander scars indicating former meandering of the Marmaton River. The location of the site appears to be oriented toward a relict channel to the west of the site. The site is concentrated just above the meander scar with the surface materials extending along the face of the scarp.

The soil of the site area is mapped by Bell and Fortner (1981) as the Mason Series. The upper horizon consists of an Ap horizon from 0-20 cm. This is followed by an A12 horizon which extends to a maximum depth of 80 cm in portions of Area A, but to only 20-28 cm in other areas of the site. This A12 horizon is underlain by a series of B horizons.

The soil profile in the southernmost test unit of Area A (Test Unit 1) was badly deflated with an Alp horizon extending from 0-10 cm and a B1 from 10-23+ cm. To the north, Test Unit 2 located in the burnt rock midden had an Ap horizon from 0-10 cm, the concentrated burnt rock level from 10-30 cm and a B1 horizon from 30-50+ cm. Test Unit 3 had an Ap from 0-20, an A12 from 20-40 and a B1 from 40-50+ cm. The A12 horizon was thickest along the western transect of the test units, especially in Test Unit 5 where it reached a depth of 60 cm. Farther to the north, the A12 horizon pinched out and was not present at all in the northernmost test unit.

Artifact Assemblage

A total of 795 artifacts were recovered from 14B0106. Of this number, 469 (59 percent) were recovered from the surface and 326 (41 percent) were found in the nine one by one m test units excavated in Area A. Distribution of this assemblage is presented in Table 7. The materials from the site include chipped stone tools, lithic manufacturing debris, groundstone tools, minerals, burnt rock, unworked stone, bone, shell, and historic artifacts. No ceramics were found. The chipped stone tools include 131 specimens including 107 from Area A, 21 from Area B, one from Area D and two from the general surface.

Table 7. Artifact assemblage from 14B0106.

	SURF	TEST	AREA A TOTAL	SURF	AREA B	AREA C	AREA D	SITE GEN SURF	SITE TOTAL
	UNIT								
CHIPPED STONE TOOLS									
Projectile Points	10	2	12	6					18
Drills	1		1						1
Bifacial Knives	2	1	3						3
Bifacial Blanks	5		5						5
Biface Fragments	31	4	35	3					38
Scrapers	2		2	1					3
Edge-Modified Flakes	39	7	46	9			1	2	58
Edge-Modified Chunks	3		3	2					5
Total	93	14	107	21			1	2	131
LITHIC MANUFACTURING									
DEBRIS									
Cores	6		6	1				1	8
Chunks	41	13	54	4			1		59
Flakes	231	121	352	3			1		356
Shatter	45	126	171	3					174
Total	323	260	583	11			2	1	597
GROUNDSTONE TOOLS									
Manos	2		2						2
Total	2		2						2
MINERALS	1	1	2						2
BURNT ROCK	3	33	36						36
UNWORKED STONE	3	4	7				1		8
UNWORKED BONE		4	4						4
UNWORKED SHELL		10	10						10
HISTORIC ARTIFACTS									
Metal			1	1					2
Glass				2					2
Clay Pipe				1					1
Total			1	4					4
TOTAL	425	326	751	33	4	4	3	795	

Included in the chipped stone tools assemblage are projectile points, drills, light and heavy duty bifaces, biface fragments, scrapers, edge-modified flakes and edge-modified chunks.

Projectile Points (n=18)

The projectile points from 14B0106 include 13 dart points and five arrow points. The dart points include eight that are sufficiently complete for typological study. Included are three side-notched points, four stemmed points and two corner-notched points. The side notched points include one medium sized point with deep broad side notches and a convex base (Figure 15a), one smaller side-notched point with a straight base that has been reworked into a scraper (Figure 15b) and one shallow side-notched point made from an oval preform (Figure 15c).

The stemmed points include two medium sized and one large dart point. These points have subrectangular square stems with straight to slightly convex bases (Figure 15d-e). One of these appears to be similar to the type commonly referred to as Langtry points (Figure 15d). The corner-notched points include two similar points made from triangular preforms which have been corner-notched producing a slightly expanding stem (Figure 15f-g). Both points have a straight to slightly concave base.

The arrow points from the site include two small thin relatively broad triangular arrow points (Figure 15h) and three narrower more robust forms. One of these more robust forms is corner-notched and is similar to the form commonly typed as Scallorn (Figure 15i). The remaining two could well be preforms for Scallorn points or are unnotched versions of this type.

Drills (n=1)

One distal fragment of a drill was recovered from Area A.

Bifacial Knives (n=3)

Three bifacial knives were recovered from Area A. The first is a heated asymmetrical triangular specimen with a constricted proximal lateral edge producing a haft element. The second is a small ovate biface. The third is a rectangular knife with alternately beveled lateral margins.

Bifacial Blanks (n=5)

Five bifacial blanks were recovered from Area A. Four appear to be fragments of thick bifaces which were probably made during thinning. Two appear to be heat treated. The fifth is a thick crude biface made from low quality chert which was probably discarded.

Biface Fragments (n=38)

Thirty-eight bifaces are insufficiently complete for classification. These include sections of both light and heavy-duty bifaces. Seven have been heated.

Scrapers (n=4)

Four scrapers were recovered from 14B0106. One is made from a broken projectile point reworked into a hafted scraper; two specimens

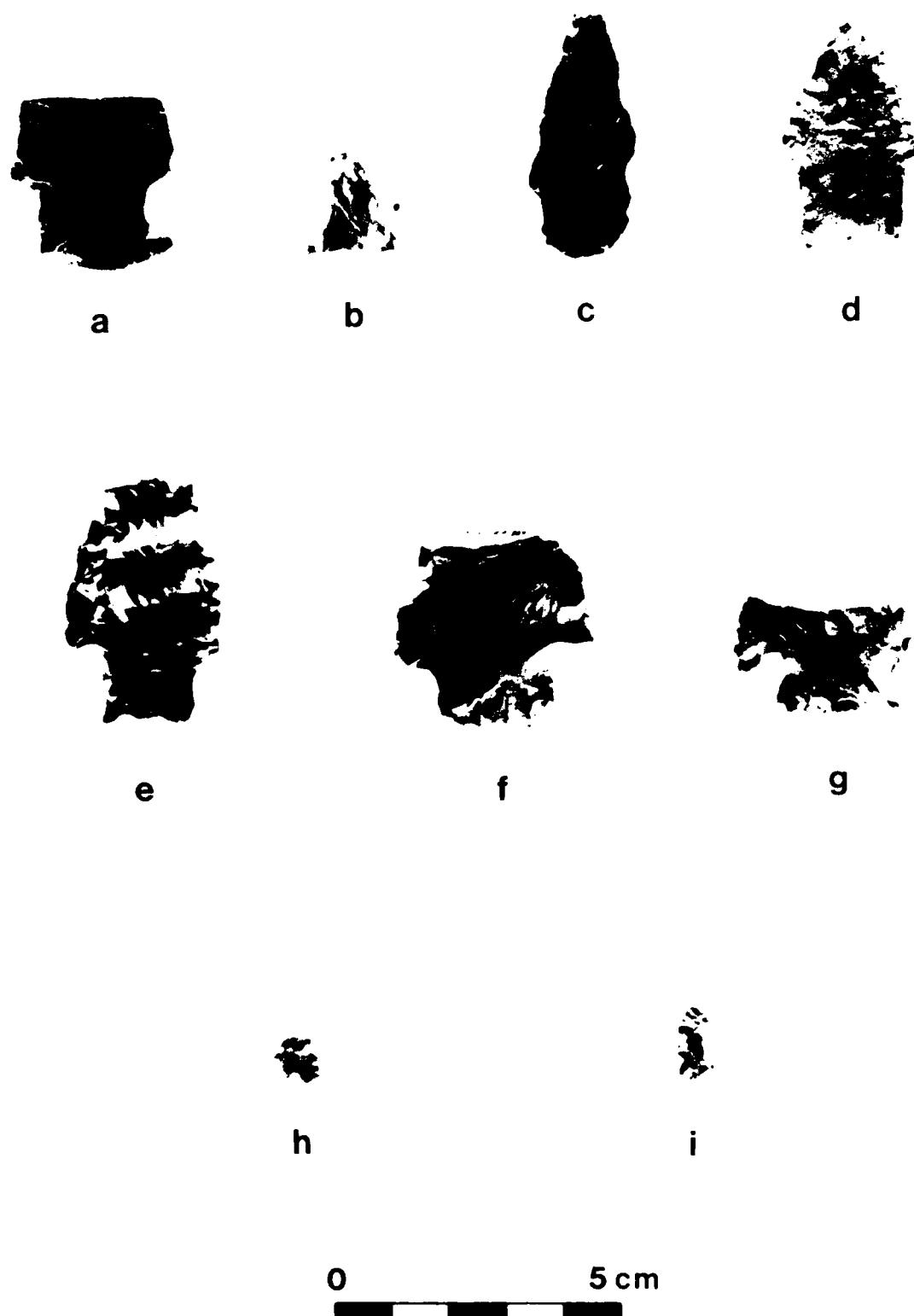


Figure 15. Projectile points from 14B0106.

are heavy-duty scrapers made from tabular cores. The fourth is a light-duty flake scraper. All scrapers are from Area A and one scraper appears to be thermally altered.

Edge-Modified Flakes (n=58)

A large number of edge-modified flakes were recovered from the site. Forty-six of these were from Area A, nine from Area B and three from the general site area.

Edge-Modified Chunks (n=5)

Five edge-modified chunks were recovered. These appear to have been used primarily as scrapers. Three were recovered from Area A and two were from Area B.

Lithic Manufacturing Debris (n=597)

Lithic manufacturing debris consists of eight cores, 59 chunks, 356 flakes and 174 pieces of shatter. The majority of the lithic manufacturing debris was recovered from Area A.

Manos (n=2)

Two manos were recovered from Area A. One specimen is a granite mano with a rough surface which has dark minerals imbedded on the working face. The second is sandstone with smoothed, abraded surfaces on both faces.

Minerals (n=2)

Two pieces of unworked hematite were recovered from Area A. Both fragments have been thermally fractured.

Unworked Bone (n=2)

A distal end of a femur of an immature deer or bison was recovered from Area A. Three small unidentifiable fragments of unworked bone were recovered from the test units in Area A.

Unworked Shell (n=10)

Ten small fragments of fresh water mussel shells were recovered from Test Unit 2, located within the burnt rock midden of Area A.

Historic Artifacts (n=5)

Historic materials recovered from 14BO106 include two metal fragments, two pieces of thick aqua-colored glass and one tan, molded clay pipe bowl fragment. These materials were primarily recovered from Area C, although one metal fragment was from Area B.

Discussion and Recommendations

14BO106 is a large multicomponent site with Plains Woodland and Historic components present. Areas A and B represent the prehistoric component and Area C consists of an extensive scatter of foundation stone and associated light scatter of historic artifacts representing the historic component. The projectile point assemblage from Areas A and B consist of a heterogeneous collection of stemmed, side-notched and corner-notched dart points and notched and unnotched arrow points. These point styles are similar to types recovered from Plains Woodland

period sites in eastern Kansas and Woodland sites in the Sac River valley of southwest Missouri (Roper 1977). Types present include Langtry and Scallorn.

Based on the distribution of artifacts from 14B0106, the activities which may be inferred to have taken place at the site include: hunting and butchering, drilling and perforating, hide scraping, light-duty cutting and scraping, chipped stone tool manufacture and maintenance and plant food preparation. These diverse forms of activity being conducted at one locale is consistent with the interpretation that 14B0106 represents a base camp dating to the Plains Woodland period. The presence of a light, preserved cultural midden to a maximum depth of 50 cm below surface indicates intensive occupation of this site.

Limited information was recovered regarding subsistence practices from the site. Mussel shell was recovered from the burnt rock midden in Test Unit 2 indicating that this midden may represent a large rock oven. Only two examples of implements associated with plant food preparation were recovered. The low frequency of tools associated with plant food preparation may indicate that the site was occupied during periods when these resources were of diminished availability, such as the winter or early spring.

In summary, Areas A and B of 14B0106 are interpreted to be the remains of a large and probably contemporaneous Plains Woodland base camp. The presence of an intact subsurface midden in association with a large burnt rock midden indicates that this site has a high potential to yield significant data regarding the community structure, season of occupation and general subsistence-settlement patterns of Plains Woodland period peoples within the Marmaton River valley. It is recommended that this site be nominated to the National Register of Historic Places. If construction of the Fort Scott Lake proceeds, then the site should be preserved. If this is not feasible, then a data recovery program consisting of block excavations in conjunction with mechanical stripping is recommended to effectively mitigate the site. The Area C Historic component is too extensively disturbed by modern agricultural and railroad construction to warrant further investigation.

14B0107

14B0107 is located on the T-1 terrace above the confluence of the Marmaton River and Paint Creek (Figure 16). The site is in a large field which reportedly had been a pasture that was cleared in recent decades. The ground had been disced and planted in wheat at the time of the investigation and had a surface visibility of 90 percent. The field had recently been rained on providing excellent visibility. The T-1 terrace at the site has been truncated by a meander scar along the southeast and northeast (Figure 16). An intermittent draw is located on the south central part of the site. The site probably extends into a pasture along the western edge of the site. The terrace surface is nearly level, except for a swale connecting the intermittent draw with the meander scar on the north (Figure 17).

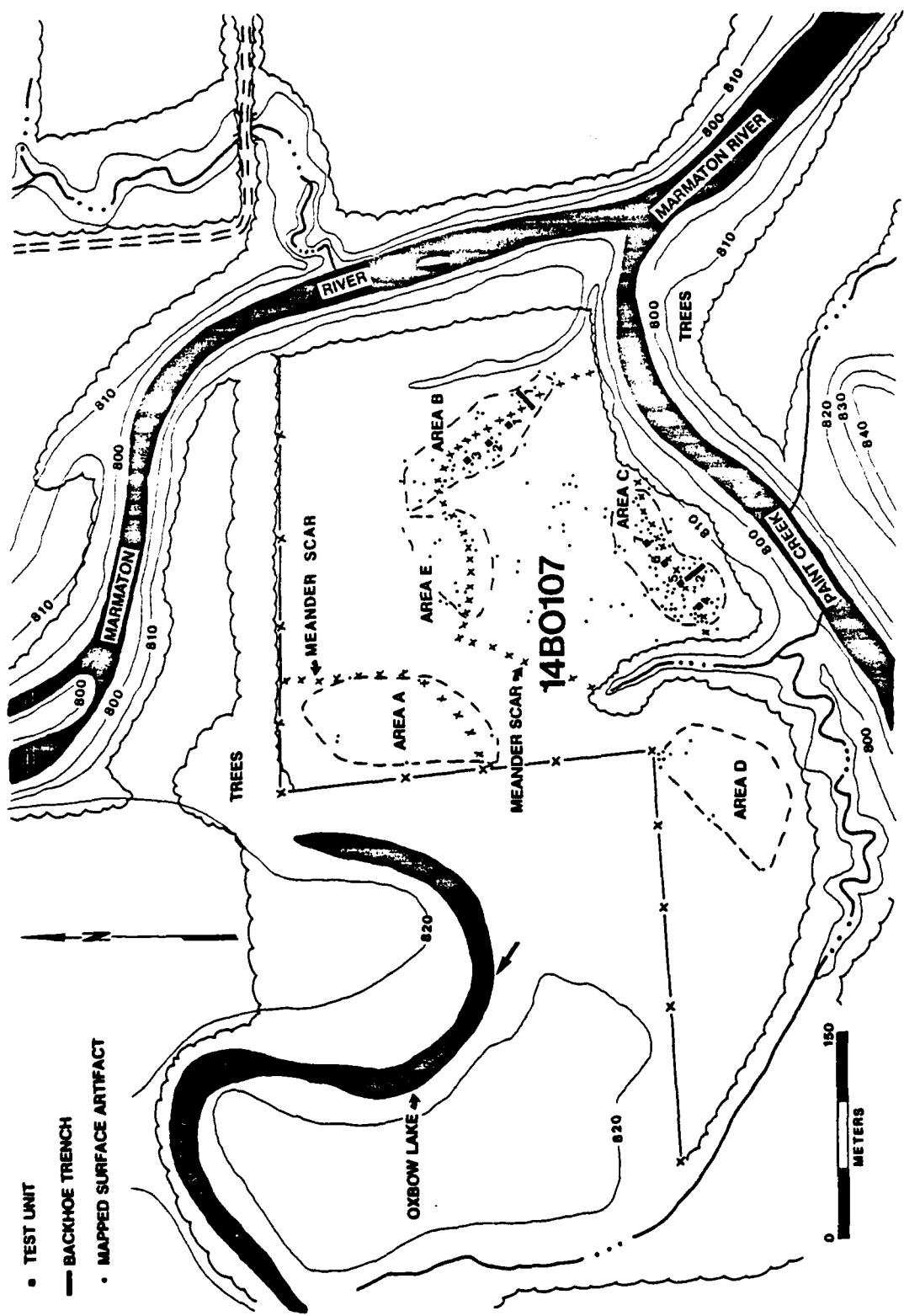


Figure 16. Location and plan view of excavation at 14BO107.



Figure 17. General view of excavations at 14B0107. View to the south of Area B (upper). View of Area C to the east (lower).

The site is composed of four major lithic scatters referred to as Areas A-D with a lighter scatter of lithics extending between these areas. Area A is in the northwest corner of the wheat field, Area B is located above a meander scar in the eastern part of the field. Area C is located east of the intermittent draw and just above the meander scar on the southeast side of the site. Area D is located west of the draw and just south of the gate in the southeast corner of the pasture.

Areas B and C of the site had the most concentrated surface deposits and were selected for subsurface testing. Four test units were placed in Area C and three in Area B. Additionally, one backhoe trench was placed in each of these areas. The entire site was surface collected and mapped. Individual tools were plotted. Lithic manufacturing debris was collected by area.

Additionally, one deflated area of the site referred to as Area E was noted in the north central area of the site just above the northern meander scar. Apparently, the upper soil horizon was bulldozed off to fill the oxbow lake in the meander scar during recent clearing operations since this oxbow is shown as being wooded on the 1962 U.S. Army Corps of Engineer project maps. The soil within the deflated area is lighter in color than the rest of the terrace surface indicating removal of the upper organically rich soil horizon. One point was recovered from this area that appears to date to the Late Archaic period.

Based on the results of the mapping, Area A consists of a very light lithic scatter extending over an area of 150 m by 60 m. Six tools were individually plotted. Area B consists of a light to moderate lithic scatter 140 m in length by 40 m in width. Forty-two individual tools were mapped in Area B. One test unit transect, consisting of three test units located at 20 m intervals, was excavated in Area B of 14B0107. Backhoe Trench 1 was also located in this area and encountered a buried cultural strata at a depth of 1.2 - 1.5 m below the surface. This cultural deposit consists of a lens of charcoal and burnt earth flecks, and occasional chert flakes. One hearth was located and charcoal from this buried occupation level has been submitted for radiometric dating. No diagnostic artifacts were recovered from the buried cultural strata in Backhoe Trench 1.

Area C consists of a heavy lithic scatter covering an area of approximately 120 m by 50 m. A total of 102 tools were mapped on the surface of Area C. One transect of four test units at 20 m intervals was laid out crosscutting the densest lithic scatter in this area. Backhoe Trench 2 was also excavated in the south central portion of Area C. This backhoe trench encountered the upper cultural deposit but did not indicate the presence of more deeply buried deposits in Area C.

All test units in Area C encountered a cultural midden consisting of burnt earth, charcoal flecks, burnt sandstone, bone, flakes and tools extending from the surface to a depth of 50 cm. Bone preservation was generally good. Test Unit 3 in Area C encountered a stain at 30 cm below surface which proved upon cross-sectioning to be a large post

mold, 17 cm wide at the top and tapering to 2 cm wide at its point 50 cm deeper into sterile soil.

Area D consists of a light lithic scatter southwest of Area C. Sixteen tools were surface mapped in Area D. Two charcoal samples from 14B0107 were submitted to Beta Analytic, Inc. for radiocarbon dating. Sample 14B0107-1 was collected from the buried cultural horizon in Backhoe Trench 1 of Area B at a depth of 80-140 cm in the B3 soil horizon. Upon acid pretreatment it was found that this sample was not sufficiently large for dating.

The second sample (14B0107-2) was from the post mold encountered at 30-50 cm below the surface in Area C. A date of 140 ± 65 years (Beta-6995) was obtained suggesting that the post mold represents a recent historic intrusive feature in this area of the site.

Artifact Assemblage

A total of 925 pieces of debris were recovered from the 14B0107 site. Test units located in Areas B and C produced 202 artifacts; the remaining materials were recovered during surface investigations. The distribution of these artifacts by class, excavation unit and area is presented in Table 8. Included within the assemblage are chipped stone tools, lithic manufacturing debris, ceramics, groundstone, minerals, burnt rock, unworked stone, shell and bone. Chipped stone tools recovered from 14B0107 include projectile points, drills, bifacial knives, bifacial blanks, biface fragments, scrapers, edge-modified flakes, chunks and cores.

Ceramics (n=4)

One rim sherd and three body sherds representing at least three separate vessels were recovered from Area B. Two specimens were from the test units and two were recovered from the surface. The rim sherd is smooth surfaced slightly flaring and tempered with grog or indurated clay (Figure 18a). It is dark brown in color with a dark brown to black core. The three body sherds include two specimens with a rough, cord-impressed surface finish. These sherds are sand tempered and the paste has hematite inclusions (Figure 18b). One additional buff colored body sherd from the test units has a plain surface finish and is tempered with indurated clay or shale (Figure 18c).

Projectile Points (n=39)

A total of 39 projectile points were recovered from 14B0107. One point was found in Area A, eight points in Area B, 16 in Area C, three in Area D, three in Area E and eight specimens were plotted outside designated site areas. Thirty-seven of these projectile points are dart points or hafted knives and only two are arrow points. Eleven of the points appear to be thermally altered. Thirty-two of the dart points and both of the arrow points are sufficiently complete for study. Based on haft element morphology, this assemblage has been divided into four groups consisting of stemmed, side-notched, corner-notched and basally-notched points.

Table 8. Artifact assemblage from 14B0107.

	AREA A			AREA B			AREA C			AREA D			AREA E		GENERAL	SITE
				TEST						TEST						
	SURF	SURF	UNIT	TOTAL	SURF	UNIT	TOTAL	SURF		SURF		SURF	SURF	TOTAL		
CERAMICS																
Rim Sherds				1			1								1	
Body Sherds		2	1	3											3	
Total		2	2	4											4	
CHIPPED STONE																
TOOLS																
Projectile Points	1	8		8	16		16	3		3		8		39		
Drills		1		1	1		1				1			3		
Bifacial Knives		1		1	3		3	1						5		
Bifacial Blanks		2		2	3		3					2		7		
Biface Fragments	3	8		8	21	3	24	1		5	11			52		
Scrapers		3		3	6	1	7	2				5		17		
Edge-Modified																
Flakes	4	38	2	40	27	3	30	10		5	12			101		
Edge-Modified												2		14		
Chunks		5		5	5		5	2								
Total		8	66	2	68	82	7	89	19	14	40			238		
LITHIC MANUFACTURING																
DEBRIS																
Cores			3		3	1	1	2				1		6		
Chunks		2	11		11	17	1	18	1			3		35		
Flakes	21	92	11	103	163	26	189	33		1				347		
Shatter	6	68	11	79	15	4	19	19	2					125		
Total		29	174	22	196	196	32	228	53	3	4			513		
GROUNDSTONE TOOLS																
Manos			1		1	1		1						2		
Metates						2		2				1		3		
Groundstone																
Fragments						1	1	2						2		
Total			1		1	4	1	5				1		7		
MINERALS																
BURNT STONE		15	8	23	3	59	62							85		
UNWORKED STONE		2		2										2		
UNWORKED SHELL		1		1										1		
UNWORKED BONE			4	4	3	50	53							57		
BURNT BONE						1	3	4						4		
BURNT SEDIMENT			2	2		9	9							11		
HISTORIC ARTIFACTS																
Porcelain			2		2									2		
Total			2		2									2		
TOTAL		37	263	40	303	289	162	451	72	17	45			925		

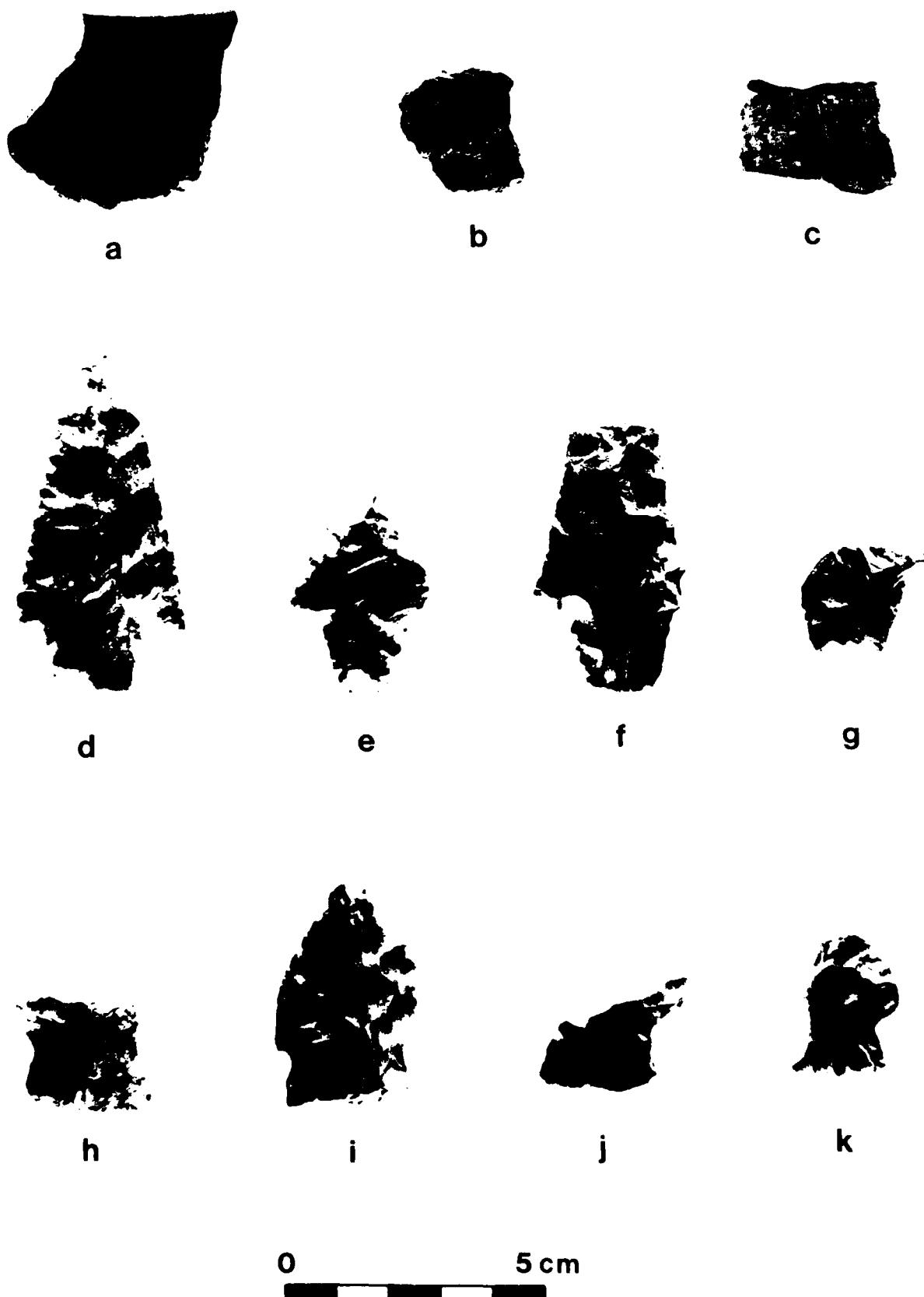


Figure 18. Ceramics and projectile points from 14B0107: a-c, ceramics; d-k, projectile points.

The 13 stemmed dart points constitute approximately 38 percent of the identifiable projectile point assemblage. This heterogenous sample includes contracting stemmed, subrectangular stemmed and narrow straight to slightly expanding stemmed forms. The five contracting stemmed forms consist of large to medium sized dart points manufactured from subtriangular to triangular preforms with a lenticular to plano-convex cross section. The contracting stems on these specimens have straight to slightly concave bases (Figure 18d-g). These forms were found only in or near Areas B and C and are commonly known as Langtry Points (Chapman 1980). The expanding stemmed forms consist of five large to medium sized dart points which exhibit slightly expanding stems with straight bases. These forms were manufactured from broad, subtriangular preforms with a lenticular cross-section (Figure 18h-k). The remaining group of stemmed points consists of three small to medium-sized triangular dart points with narrow straight to slightly expanding stems (Figure 19a-c). Bases on these specimens are straight to slightly convex and the blade cross-section is lenticular. This group is distinguished from the preceding group by their smaller size and relatively narrow stem width.

Side-notched dart points make up five percent of the identifiable projectile point assemblage from 14B0107. Two specimens were recovered from Area C. Both of these are small triangular dart points with straight bases and side-notches. These exhibit a lenticular cross-section (Figure 19d-e).

Corner-notched dart points constitute approximately 26 percent of the identifiable projectile point assemblage from 14B0107. These forms were recovered primarily in or near Areas B and C, though one specimen was found in Area A. The corner-notched points comprise a heterogenous group of small to medium sized dart points manufactured from subtriangular to triangular preforms. The corner notches vary from broad to narrow U-shaped notches which produce prominent barbs. The stems are generally short and expanding. Eight of these specimens exhibit straight to slightly concave bases. The remaining two examples have a distinctly concave base and a distinctly convex base, respectively (Figure 19f-n). All of the corner-notched projectile points have a lenticular cross-section.

Five large to medium sized basally-notched points were recovered from 14B0107 and constitute approximately 13 percent of the identifiable projectile point assemblage. All but two of these points have broken or reworked bases. Three of the specimens have broad, deep notches which produce barbs or tags which extend to, or nearly to the base of the point (Figure 20a-c). Two of these points have intact bases, one has a subrectangular stem and the other a contracting stem. These specimens were manufactured from large subtriangular preforms and two of the specimens are similar to the types commonly referred to as Smith Basal Notched (Chapman 1975). The remaining two basal-notched points exhibit narrow, U-shaped notches which produce small but prominent barbs. These two forms were manufactured from large ovate preforms with lenticular cross-sections (Figure 20d-e).

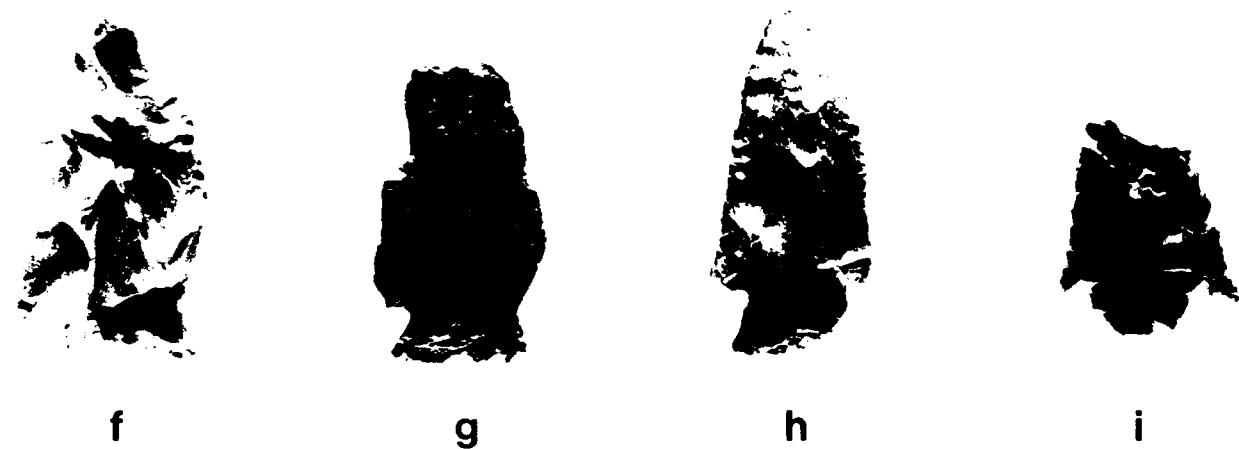
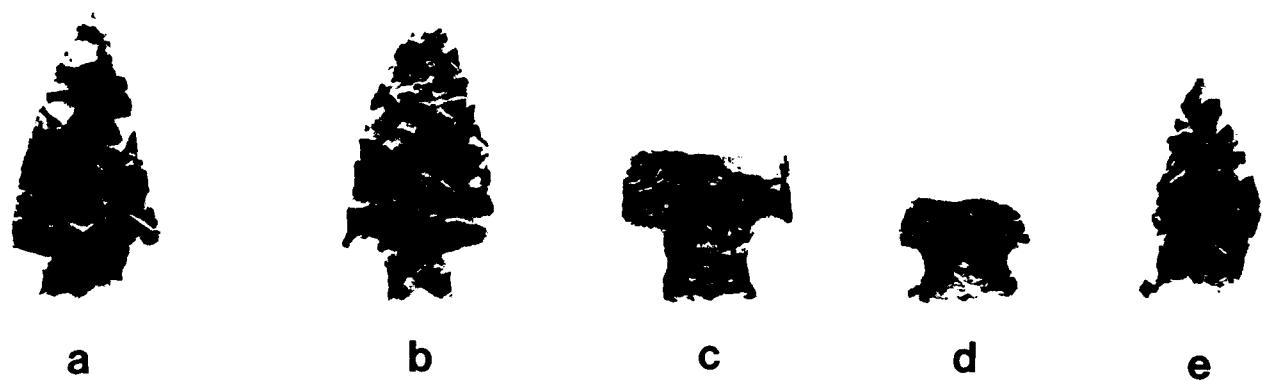


Figure 19. Projectile points from 14B0107



a



b



c



d



e



f



g



h



i



Figure 20. Projectile points and drills from 14B0107 : a-f, projectile points; g-i, drills.

The two arrow points recovered from 14B0107 include one crude corner-notched form made from a small flake. The second form is a well made triangular corner-notched point with a straight base (Figure 20f). Both specimens are similar to the Scallorn type commonly found in Late Woodland and Plains Woodland contexts.

Drills (n=3)

Three drills were recovered from 14B0107. One specimen is an expanding stemmed form with a straight base (Figure 20g). The second form has a broad, contracting stem and short, narrow bit. This specimen was probably made from a broken projectile point similar to the Langtry type (Figure 20h). The third example is a corner-notched form with a short, expanding stem and convex base (Figure 20i). Two of the three drills appear to have been thermally altered. The contracting stemmed drill was recovered from Area B, the expanding stemmed drill from Area C and the corner-notched drill from Area E.

Bifacial Knives (n=5)

Five bifacial knives were recovered including one from Area B, three from Area C and one from Area D. Three of these are triangular to subtriangular light-duty bifaces (Figure 21a-b) and two are subrectangular heavy-duty bifaces. One bifacial knife has been heated.

Bifacial Blanks (n=7)

Seven bifacial blanks including two from Area B, three from Area C and two from the general site surface were recovered. Three of these are fragments of heavy-duty bifaces suitable for reduction into points or knives. Four are smaller light-duty bifaces. Two bifacial blanks have been heated.

Biface Fragments (n=52)

A total of 52 biface fragments including three from Area A, eight from Area B, 24 from Area C, one from Area D, five from Area E and 11 from the general surface were recovered. These consist of fragments of light and heavy-duty bifaces. Twelve of the biface fragments have been heated.

Scrapers (n=17)

Seventeen scrapers were recovered from 14B0107. Seven of these have been thermally altered. Three scrapers were found in Area B, eight in Area C, two in Area D and five specimens were located outside designated areas. Included are two large, semicircular scrapers manufactured from primary decortication flakes (Figure 21c). Nine end scrapers consist of robust forms made from tabular flakes which exhibit a plano-convex cross-section. Six of these retain varying amounts of cortex. The second group of end scrapers consists of six light-duty forms manufactured from small, thin flakes. Cortex is absent on the smaller form of end scraper and these types are commonly referred to as thumbnail scrapers (Figure 21d-e).

Edge-Modified Flakes (n=101)

A total of 101 edge-modified flakes were recovered from 14B0107. Four were from Area A, 40 from Area B, 30 from Area C, ten from Area D, five from Area E and 12 were collected from the general site area. One

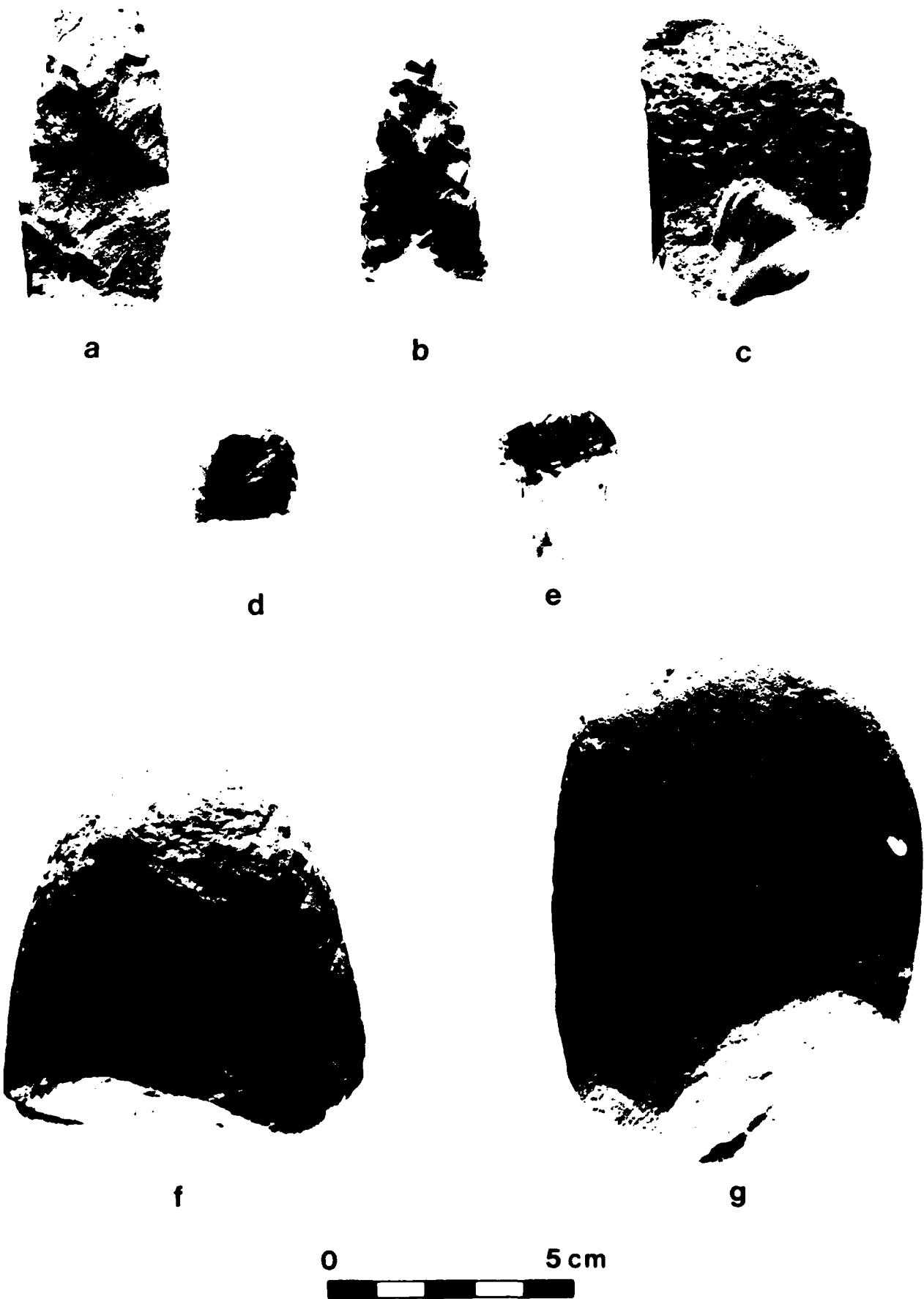


Figure 21. Bifacial knives, scrapers and manos from 14B0107:
a-b, bifacial knives; c-e, scraper; f-g, mano.

specimen is noteworthy in that it is a large flake knife with its proximal end modified with a U-shaped notch.

Lithic Manufacturing Debris (n=505)

Lithic manufacturing debris includes six cores, 35 chunks, 339 flakes and 125 pieces of shatter. Cores were recovered primarily from Areas B and C. Chunks were recovered from all areas except E with the majority found in B and C. Flakes and shatter were located in all areas of 14B0107.

Groundstone (n=7)

A total of seven groundstone tools were recovered from 14B0107. Two cobble-sized ovate manos made from brown fine to medium grained quartzite were recovered. One specimen is from Area B and one is from Area C. The specimen found in Area B is made from sandstone and exhibits pecked lateral margins and a convex, highly ground working surface (Figure 21f). The mano from Area C has a slightly convex, ground working surface with a shallow pit located in the center. A deeper, broader pit is located on the reverse, unground surface of this tool and probably served as a nutting stone. Both ends of this mano have been battered indicating some use as a hammerstone (Figure 21g).

One complete metate and two fragments were recovered from 14B0107. The complete specimen is a large, rectangular slab of fine grained sandstone, 39 by 40 by 8 cm. The central area of this metate exhibits a ground trough 20 cm in length and 15 cm in width. The reverse side of this metate also exhibits a trough of similar dimensions. This specimen was recovered from Area C. A second small fragment of a metate was also recovered from Area C. This small fragment is made of a fine grained, heated sandstone and exhibits a slightly concave, ground surface on one side. The third metate fragment was recovered from the general site area and exhibits a flat, ground surface on one side. Grooves of varying width are evident on both surfaces of this specimen indicating secondary use as an abrader.

Minerals

Minerals found on this site include two pieces of unworked hematite recovered from Area C.

Burnt Rock, Burnt Sediment and Unworked Stone (n=105)

This material accounts for 62 percent of the unworked artifacts recovered from 14B0107. Most of this debris consists of burnt rock found in Areas B and C.

Unworked Shell (n=1)

One piece of fresh water mussel shell was recovered from Area B.

Unworked and Burnt Bone (n=53)

Unworked and burnt bone were recovered primarily from the test excavations located in Areas B and C. Only three pieces of bone were recovered from the surface. Test units in Area C accounted for 79 percent of all of the recovered unworked bone. The balance of this bone was found in Area B. Many of the bone fragments are too small for

identification. However, some of the larger long bones appear to be from white-tailed deer.

Historic Artifacts (n=2)

Two small pieces of earthenware were found on this site. The frequency of this material is too low to indicate a Historic period occupation.

Discussion and Recommendations

14B0107 is a large, stratified Plains Woodland and Late Archaic site consisting of four distinct lithic scatters, designated as Areas A-D. Based on the density of artifact and tool classes, Areas B and C probably represent base camps or permanent villages. Based on projectile point styles, the components from 14B0107 have been assigned to the Plains Woodland and Late Archaic periods. A fourth area of the site, referred to as Area E, represents an area disturbed by recent bulldozing.

Four percent of the assemblage from the site was recovered from Area A. The restricted lithic tool inventory, consisting of one projectile point, three light-duty bifaces and four modified flakes, indicates that Area A represents a small hunting camp or a specialized use area associated with one of the more intensive occupations located in Areas B or C. The projectile point recovered from Area A is a deeply corner-notched form. This corner-notched specimen is similar to forms recovered from the Snyder site known as Walnut Valley Corner Notched (Grosser 1977), and indicates a Late Archaic occupation for this area.

The collections recovered from Area B account for 32 percent of the total site assemblage. Lithic tools recovered from this area include eight projectile points, 12 bifaces, one drill, three scrapers, 45 edge-modified tools and one mano. The entire assemblage of ceramics recovered from the site, consisting of four sherds, was also recovered from this area. The diverse forms of activities represented by this assemblage include hunting, butchering, cutting, hide preparation, woodworking, plant food preparation, drilling and perforating. Lithic tool manufacture, maintenance and modification were also conducted within this area. These varied activities and the presence of a light cultural midden indicate an intensive occupation at Area B, such as a base camp or small hamlet.

Based on projectile point styles and the stratigraphy evident in Backhoe Trench 1, this area of 14B0107 is interpreted as having two components, one relating to the Plains Woodland and one to the Late Archaic period. All of the test unit materials and most of the surface debris are associated with the upper component which represents a Plains Woodland base camp or hamlet. Temporally diagnostic artifacts associated with the upper component include ceramics and Langtry dart points.

The Archaic component is indicated by the presence of large, broad, deeply basal-notched points similar to forms known as Smith Basal Notched. These projectile points were on the surface near the western

edge of Area B and close to the disturbed Area E. They likely were originally from lower deposits in the T-1 terrace fill and may be associated with the buried cultural horizon located in Backhoe Trench 1. A charcoal sample from the buried cultural zone has been submitted for analysis and the date from this sample should provide definitive data on this problem. The exact nature of the Late Archaic occupation is not known. If it is associated with the buried cultural zone then it would appear to represent a fairly intensive occupation.

Materials recovered from Area C account for 49 percent of the artifact assemblage from 14B0107. Tools recovered from this area include 16 projectile points, one drill, 31 bifaces, seven scrapers, 35 edge-modified tools, one mano and two metates. Test units excavated in Area C demonstrated the presence of a dense cultural midden from the surface to a depth of 50 cm. The location of a large post mold in Test Unit 6 indicates the presence of at least one structure in this area. Temporally diagnostic artifacts include Langtry dart and Scallorn arrow points. These materials indicate a Plains Woodland cultural affiliation for Area C. The dense cultural midden, evidence for at least one structure, wide range and high frequency of tool types indicate that Area C represents the location of a Plains Woodland period base camp or hamlet. Backhoe Trench 2, located in Area C did not produce evidence of additional buried components.

Materials from Area D constitute eight percent of the artifact assemblage from 14B0107. Tools recovered from this area include three projectile points, two bifaces, two scrapers and 12 edge-modified flakes and chunks. The projectile points recovered from this area include one large, broad, basa-notched form and one stemmed form similar to a type commonly known as Table Rock stemmed are generally associated with the Late Archaic period. The tool assemblage recovered from this area is indicative of a small hunting camp.

Approximately two percent of the artifact assemblage was recovered from the disturbed section of the site referred to as Area E. Tool classes recovered include three projectile points, one drill, five bifaces and five edge-modified flakes. Two of the projectile points are sufficiently complete for typological comparison. One specimen is a Scallorn point indicative of the Plains Woodland Period. The second is a basally-notched Late Archaic type.

The size, intensity of occupation and good sub-plowzone preservation indicate that this site contains significant information on Plains Woodland adaptations in southeast Kansas. Furthermore, the presence of a buried Archaic component increases the potential of the site to provide information on the Archaic Period of the Marmaton drainage. Based on these considerations, 14B0107 is eligible for nomination to the National Register of Historic Places. If the Fort Scott Lake Project is funded for construction, the investigators recommend that data recovery investigations be conducted at this site. These investigations should include a systematic backhoe trenching program designed to locate buried cultural deposits within and between the designated areas. Hand dug block excavations are recommended in Areas B and C in conjunction with controlled mechanical scraping to

delineate associated features and activity areas. Additional testing should be conducted in Areas A and D to determine if further excavations are warranted in the area.

14B0108

This site is situated on the T-1 terrace just east of the confluence of an intermittent stream with Paint Creek and consists of a light lithic scatter on an undulating terrace surface (Figure 22). The terrace surface at 14B0108 appears to have been truncated by a meander from the west. Additionally, there is evidence of modification of the terrace in the form of a low depressional draw extending from north to south along the terrace remnant. The site is located on the terrace surface to the east of this draw and extends to the west on a higher remnant of the terrace. A general view of the site and excavations is shown in Figure 23.

Intensive surface survey indicated that the site covered an area 85 by 55 m. One test unit transect was located to crosscut the lithic concentration and to sample the geomorphological variation consisting of the two higher surfaces separated by a depressional draw on the terrace surface. Test excavations indicated that the cultural deposits on the two higher surfaces were shallow with limited cultural materials present from 0 to 30 cm below the surface. However, Test Unit 3, located in the depression between Test Units 1 and 2, encountered a dense cultural midden at 60 cm below the surface. To further test this buried component, a backhoe trench was excavated across the base of the depressional draw. The profile exposed by the backhoe trench indicated the presence of a buried paleosol at 50 cm below surface containing a thick cultural midden (Figure 24). Three burnt areas, probably representing hearths, were exposed by the trench between 1 m and 1.2 m below surface. A light charcoal and burnt earth scatter continued to a depth of 1.8 m below the surface.

Stratigraphy

The terrace surface at 14B0108 is mapped by Bell and Fortner (1981) as the Mason Soil series. The profile exposed by the backhoe trench consists of the upper gully or depressional fill located over the Mason Soil profile. The profile described for the eastern part of the trench is as follows:

Ap	0-18 cm	dark grayish brown (10YR4/2 wet) silt with a crumb structure;
B1	18-48 cm	very dark gray (10YR3/2 wet) silt loam with a weak, fine subangular blocky structure;
IIB1	48-100 cm	very dark gray (10YR3/1 wet) silt loam with a weak, very fine subangular blocky structure;

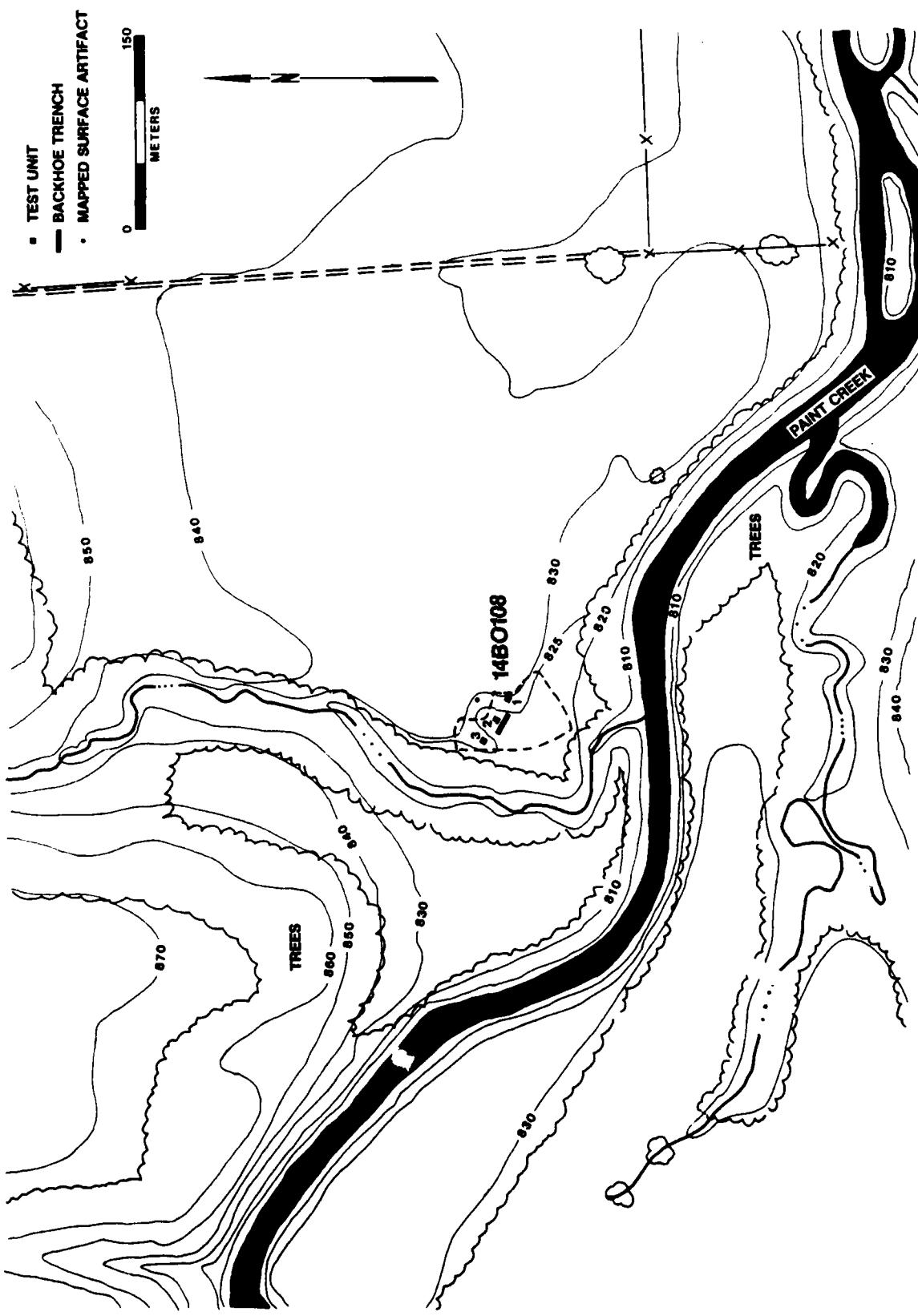


Figure 22. Location and plan view of excavations at 14BO108.



Figure 23. General views of 14B0108 and 14B0116. View to the north of excavation at 14B0108 (upper). Example of cemetery headstone at 14B0116 (lower).

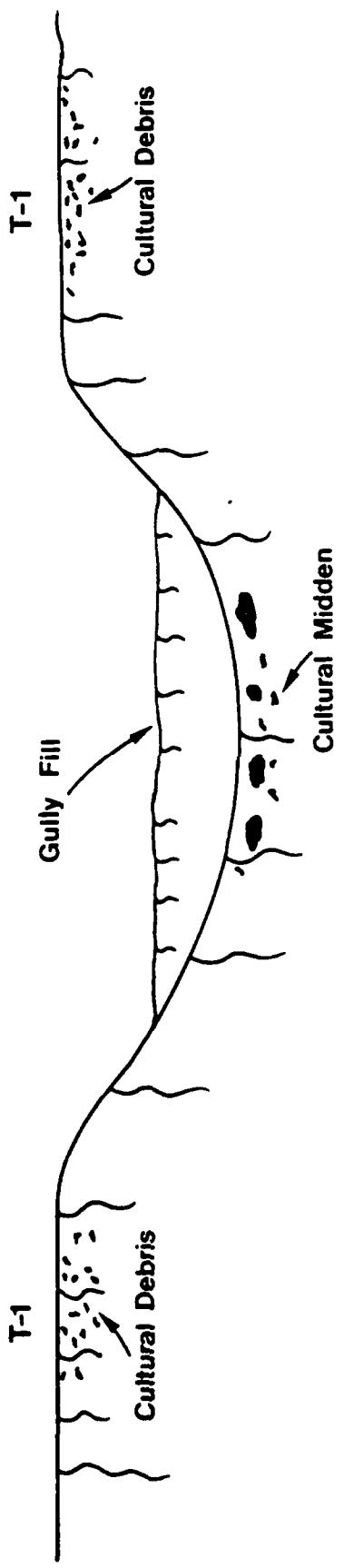


Figure 24. Generalized cross-section of site 14B0108.

IIB2t 100-160 cm mottled very dark grayish brown (10YR3/2 wet) and dark brown (10YR3/3 wet) silty clay with a well developed subangular blocky structure.

The soil strata thickened and dipped gently to the west with the upper boundary of the IIB1 horizon beginning at 52 cm below the surface and extending to a depth of 137 cm at the west end of the trench. The concentrated zone of buried cultural debris was primarily located in the IIB1 soil horizon consisting of a concentrated zone of charcoal, burnt earth and cultural debris including several hearths.

A charcoal sample recovered from a hearth located in the IIB2t soil horizon at a depth of 80-100 cm was submitted to Beta Analytic, Inc. for dating. A date of 270±70 B.P. was obtained (Beta-6996) suggesting that the cultural deposit dates to the Protohistoric Period.

Artifact Assemblage

A total of 182 artifacts were recovered during the investigations conducted at 14B0108. A total of 102 specimens were from the surface and accounted for 56 percent of the assemblage. The balance of 80 artifacts were recovered from the three test units and a backhoe trench. Included within the assemblage are lithic manufacturing debris, unworked stone, burnt rock and bone. The distribution of this material is presented in Table 9.

Chipped Stone Tools (n=10)

Chipped stone tools found at 14B0108 include one biface fragment and nine edge-modified flakes. The biface fragment and three of the unifacial tools appear to have been thermally altered. All but two of the chipped stone tools were surface finds.

Lithic Manufacturing Debris (n=90)

Lithic manufacturing debris includes two cores, five chunks and 29 pieces of shatter. Eighty-four percent of this material was recovered from the surface and ten percent from the test units.

Burnt Stone and Unworked Bone (n=81)

Midden debris consisting of 76 pieces of burnt stone and five pieces of unworked bone makes up the balance of materials found at this site. Some material was recovered from the surface and the test pits, but most was recovered from the buried deposit exposed by the backhoe trench.

Historic Artifacts (n=1)

One piece of historic crockery was found in the site area, but this sole historic artifact is not interpreted as representing a historic component for 14B0108.

Discussion and Recommendations

The limited artifact assemblage recovered from the 14B0108 would seem to indicate that this site represents a small limited use camp

Table 9. Artifact assemblage from 14B0108.

SURFACE	TEST	TEST	TEST	BACKHOE	TOTAL
	UNIT	UNIT	UNIT	TRENCH	
	1	2	3		
CHIPPED STONE TOOLS					
Biface Fragments	1				1
Edge-Modified Flakes	7			2	9
Total	8			2	10
LITHIC MANUFACTURING DEBRIS					
Cores	2				2
Chunks	4	1			5
Flakes	46	2	3	3	54
Shatter	24	3		2	29
Total	76	6	3	5	90
BURNT ROCK	16	4	14	39	73
BURNT SEDIMENT			3		3
UNWORKED BONE	1			1	3
					5
HISTORIC ARTIFACTS					
Ceramics	1				1
Total	1				1
TOTAL	102	10	20	49	182

site. The discovery of a deeply buried midden consisting of charcoal flecks, burnt earth, burnt rock, bone and occasional flakes in Test Unit 3 and the backhoe trench indicates that the center of the occupation was located in the low depressional area between the two higher terrace remnants where Test Units 1 and 2 are located. Eighty-six percent of the subsurface materials were recovered from both Test Unit 3 and the backhoe trench which were located in this depressional area. Four

features, interpreted as the remains of hearths, were encountered in the backhoe trench. These features consisted of concentrations of burnt earth, burnt rock and charcoal flecks. The presence of the cultural midden and associated features indicates that 14B0108 represents a small habitation or camp site where activities associated with light-duty cutting and scraping and food processing and consumption occurred. The location of this site, in a wet depressional area on the T-1 terrace surface, is interpreted as indicating that the site represents a dry season occupation.

No diagnostic artifacts were recovered from the site and the cultural affiliation of the site cannot be precisely determined. Gerry Love, the owner of the property, reports finding large dart points on the site which would suggest an Archaic or Plains Woodland cultural affiliation. The location of the site in a gully incised in the upper part of the T-1 terrace fill is suggestive of an occupation dating to the post Late Archaic Period. On the other hand, the radiocarbon date of 270 ± 70 B.P. suggests that the site dates to the Protohistoric Period.

The unique depositional setting of 14B0108 indicates that this site represents a previously unknown site type in the Fort Scott area. Based on this consideration in conjunction with the presence of a buried, intact, cultural midden containing features, the site is considered to be significant in terms of regional research questions and is considered eligible for nomination to the National Register of Historic Places. If the Fort Scott Lake Project is funded for construction, archaeological data recovery investigations should be conducted if the site cannot be preserved. This mitigative strategy should include further testing of the depressional fill and excavation of a large block adjacent to the backhoe trench.

14B0110

14B0110 is situated on a south facing upland slope overlooking the Marmaton River (Figure 13). The site is a historic site consisting of a highly irregular scatter of limestone foundation cobbles and historic artifacts. One prehistoric chipped stone tool and one bone tool were found in the site area. At the time the investigations were conducted, the site area was situated in an open field with a light cover of soy bean stubble. Surface visibility was approximately 70 percent.

Pedestrian survey indicated the presence of two concentrations of foundation cobbles and associated artifacts. The periphery of the site and the boundaries of the defined concentrations were then mapped by means of a plane table and alidade. General surface collections were then conducted from the two concentrations referred to as the northwest and southeast areas. A general site surface collection was also made.

Interviews with local informants and a search of historic documents were made to attempt to identify the structure. Local county and state records were reviewed, including Government Land Office Records, various historical county atlases, plat books and local histories. The

landowner of 14B0110 declined permission for subsurface investigation, although subsurface testing was not required for a determination of National Register eligibility.

Artifact Assemblage

A total of 78 artifacts were recovered from the surface of 14B0110. Artifact classes present in this collection include a chipped stone tool, a bone tool and a large quantity of historic material such as glass, metal and ceramics. A few fragments of fresh water mussel shell were also collected. The distribution of materials recovered from the site are presented in Table 10.

Chipped Stone Tools (n=1)

One distal section of a bifacial knife was recovered from the northwest concentration. No other chipped stone artifacts were found on 14B0110.

Worked Bone (n=1)

A distal end fragment of a bone awl or perforator was recovered from the site. This specimen was manufactured from a piece of split long bone (Figure).

Historic Glass (n=33)

Glass fragments include sections of at least six bottles, two window pane fragments, two glass plate fragments and two pieces of a thick green insulator. Colors of the collection range from black, brown, light purple to light green. Approximately 94 percent of the historic glass assemblage is heat fractured or discolored. Three specimens exhibit edge modification suggestive of use as scraping tools. Two of these specimens of edge-modified glass are bottle rim fragments. The three pieces of edge-modified glass were recovered from the northwest concentration.

Historic Ceramics (n=24)

Fragments of crockery include five rim sherds, four basal sections and three body sherds. This material represents at least 11 separate vessels, including large crocks, bowls and a small vase. Ten pieces of common white ware representing pieces of cups, bowls and plates were found. One ceramic figurine fragment and two ceramic insulators constitute the balance of the earthen ware assemblage.

Metal Objects (n=13)

The entire collection of metal objects recovered from 14B0110 were located in the northwest concentration. This material includes one horseshoe, one stake, three gears, one axe, three metal straps, two large bolts, a piece of metal wire and two small unidentifiable fragments.

Discussion and Recommendations

14B0110 consists of a highly irregular distribution of foundation stones with two areas of foundation stone concentrations. The majority of the artifacts associated with these concentrations are clearly

Table 10. Artifact assemblage from 14B0110.

	GENERAL SURFACE	NORTHWEST CONCENTRATION	SOUTHEAST CONCENTRATION	SITE TOTAL
PREHISTORIC ARTIFACTS				
Bifacial Knife		1		1
Worked Bone	1			1
Total	1	1		2
SHELL	1	1		2
HISTORIC ARTIFACTS				
Metal		13		13
Glass	1	12	21	34
Ceramics	3	9	15	27
Total	4	34	36	74
TOTAL	6	36	36	78

historic. The debris classes from the northwest concentration consist primarily of the remains of large glass and crockery vessels in association with a variety of metal implements. The combination of large vessel sherds and metal tools, gears, straps and bolts is interpreted as representing the remains of a tool shed or barn. The artifact assemblage recovered from the southeast concentration consists primarily of smaller glass bottles, small crockery vases and bowls and fragments of white ware cups, bowls and plates. This debris and the associated foundation stones are interpreted as representing the location of a historic residence. All of the glass fragments from the southeast concentration exhibit heat discoloration or fractures, indicating that this structure burned.

The examination of various historical atlases, Government Land Records and plat books provided additional data regarding 14B0110. The 1859 Government Land Office Survey does not record any structures at this location in 1859. However, the 1878 Bourbon County historical atlas (Edwards Brothers 1878) records the residence of Edith Goth at the site. This residence is not listed in the 1920 Bourbon County atlas indicating that the structure was not standing 42 years later. The Bourbon County Registrar of Deeds Office indicate that the property the

site is located on was purchased by John Hartman from Milton McKinnis in 1911. McKinnis purchased it from William Wright in 1909. Wright purchased it from George J. Sutton in 1895. Mildred McKee currently owns the property and lives on the farmstead immediately to the southeast of 14B0110. She states that a house belonging to John Harman was destroyed at this location by fire in 1915 during the process of relocating the structure by means of a steam tractor. This information is consistent with both the historic map data and the archaeological remains, many of which exhibit evidence of being burnt. In summary, both the archaeological remains and historic records indicate that 14B0110 represents a farm house which was built in the late 19th century and destroyed by fire in the early 20th century.

The presence of one light-duty biface, one bone awl and three edge-modified pieces of glass are possible evidence of a Proto-Historic or Historic aboriginal component for this site. If this is correct, the occupation would probably have to predate the construction of the farmstead in the 1870s. An alternative explanation of the association of these remains with the historic materials is that the chipped stone tool was recovered from a different locale by the inhabitants of the farmstead and lost in the fire. The edge-modified glass could have been utilized by the Euro-American settlers for some tasks around the farmstead, or be the result of some fortuitous circumstance resulting in the edge-modification. The small number of materials possibly associated with a Historic aboriginal or Proto-Historic occupation and the complete lack of chipped stone debitage from the site area seriously question the presence of an earlier Proto-Historic or Historic aboriginal component at the site.

The historic component at the site has undergone a high degree of disturbance. Plowing has disrupted and dispersed the old foundations over a broad area. Based on the disturbed nature of this site, its limited artifact content and the high degree of disturbance, 14B0110 is not considered eligible for nomination to the National Register of Historic Places.

14B0111

This site consists of a very light lithic scatter located on T-1 terrace 450 m north of the Marmaton River (Figure 13). The site is immediately to the north of 14B0106. At the time of the investigations, the site was situated in an open, freshly disced soybean field. Approximately 90 percent of the ground surface was visible. Intensive survey indicated the presence of a diffuse lithic scatter covering an area 50 by 40 m. The grid system established on 14B0106 was extended north across the railroad grade and the periphery of this scatter and all located tools from 14B0111 were mapped with reference to this grid system. A general surface collection was made from the defined site and one tool was plotted in.

The land owner of the site decline permission for test pitting and backhoe trenching. To determine whether a subplowzone midden was

present, two soil auger transects were laid out crosscutting the area of artifact distribution on a north-south and east-west axis. The soil auger tests were excavated to a depth of 40 cm below the surface. All auger tests were culturally sterile. No evidence of charcoal, burnt clay or the presence of a subsurface midden was encountered. Bell and Fortner (1981) list 14B0111 as being on the Leanna Soil Series. This series is a poorly drained floodplain soil found on T-1 terraces along the Marmaton valley.

Artifact Assemblage

A total of 75 artifacts were recovered during the investigations conducted at 14B0111. Included are chipped stone tools, lithic manufacturing debris, groundstone tools, burnt rock and unworked stone. The distribution of this material is presented in Table 11.

Chipped Stone Tools (n=16)

The chipped stone tool inventory includes two projectile points, one biface fragment, nine edge-modified flakes and four edge-modified chunks. The projectile points include one basal section of a medium-sized stemmed dart point with a subrectangular stem and a biconvex cross-section. The second projectile point is a small dart point with a narrow, parallel side-stemmed, convex, almost pointed base. This specimen also has a thick biconvex cross-section. The first point is similar to Dustin and Lamoka point types associated with the Late Archaic El Dorado Phase at the Snyder site (Grosser 1977) and at the Williamson site (Schmits 1980).

The biface recovered from this site is a fragment of an ovate knife. The balance of the chipped stone tool assemblage consists of nine edge-modified flakes and four edge-modified chunks. Three of the chipped stone tools appear to have been thermally altered.

Lithic Manufacturing Debris (n=53)

Lithic manufacturing debris from 14B0111 includes three chunks, 35 flakes and 15 pieces of shatter.

Groundstone Tools (n=1)

One quartzite cobble mano, which has two ground surfaces, is the only groundstone tool from 14B0111.

Burnt Rock and Unworked Stone (n=5)

The balance of debris recovered from 14B0111 consists of one burnt rock and four pieces of unworked stone.

Discussion and Recommendations

14B0111 is a small light lithic scatter with a limited tool inventory. The lithic assemblage indicates that activities associated with hunting and butchering and various light-duty cutting and scraping activities occurred at this site. The presence of a mano indicates that limited plant food processing also occurred. The limited amount of lithic manufacturing debris indicates chipped stone tool maintenance and modification rather than tool manufacture at the site. This limited

Table 11. Artifact assemblage from 14B0111.

SURFACE	
CHIPPED STONE TOOLS	
Projectile Points	2
Light Duty Biface	1
Edge-Modified Flakes	9
Edge-Modified Chunks	4
Total	16
LITHIC MANUFACTURING DEBRIS	
Chunks	3
Flakes	35
Shatter	15
Total	53
GROUNDSTONE TOOLS	
Mano	1
Total	1
BURNT ROCK	1
UNWORKED STONE	4
TOTAL	75

range of activities at 14B0111 suggests that the site served as a small camp or extractive site. The sample of two fragmentary dart points makes the exact assignment of temporal and cultural affiliation problematical. Based on the style of these dart points, the occupation probably dates to the Late Archaic period, although this cannot be determined with certainty. Based on the limited artifact content and absence of intact subsurface deposits, 14B0111 is not recommended for nomination to the National Register of Historic Places.

14B0113

This site is situated near the juncture of upland terrain and the T-0 floodplain of the Marmaton River. 14B0113 is located approximately 152 m south of the Marmaton and 40 m east of an intermittent stream (Figure 13). At the time this site was investigated, it was situated in a harvested bean field with approximately 60 to 70 percent of the ground surface visible. 14B0113 consists of a light scatter of historic glass, crockery and metal tools. No evidence of a foundation was observed. A thorough search of local, state and government records, including U.S. General Land Office Survey plats and the 1878 and 1920 Bourbon County atlases (Lawrence Brothers 1878), failed to document the presence of any historic structures within the vicinity of this site.

The investigations conducted at 14B0113 resulted in the recovery of 14 historic artifacts including glass, ceramics and metal objects. The historic glass includes four pieces of flat window glass, two bottle fragments and one piece of a white glass plate. Four pieces of a white ware plate constitute the ceramic assemblage from this site. One large iron rod, an iron hood and a piece of a door latch constitute the metal artifacts.

14B0113 consists of a very light scatter of historic artifacts scattered over an upland nose south of the Marmaton River. This site dates to the Historic period and, based on the glass, white ware and metal, it is probably associated with the second half of the 19th or early 20th century. The site area has been heavily disturbed by recent plowing and there is no evidence of any intact foundation. Based on the survey data and the results of the historic literature search, this site might be a structure dating to the Historic period, but may also be a dump of historic materials. The site is not considered eligible for the National Register of Historic Places.

14B0114

This site is situated on a small upland slope 20 m east of Bunion Creek (Figure 5). When the site was located it was in a freshly planted wheat field with 80 percent ground surface visibility. Eleven small waste flakes and one piece of unworked stone constitute the entire assemblage recovered during the survey of 14B0114. Three of the flakes appear to be thermally altered. None of this debitage was modified for use.

14B0114 consists of a very light lithic scatter over upland terrain just east of Bunion Creek. Only 11 flakes were recovered from a 375 sq m area. The geomorphic location of 14B0114 on upland terrain indicates that there is little likelihood of subsurface deposits. This site is interpreted to represent a prehistoric limited activity area. On the basis of the survey data, further testing was not warranted and the site is not recommended for nomination to the National Register of Historic Places.

14B0116

Site 14B0116 is a probable cemetery located on the T-1 terrace overlooking Paint Creek (Figure 25). The site consists of five rectangular limestone slabs set in the ground, forming what appears to be a series of protruding headstones. The stones range from 15-30 cm in width and are exposed 15-20 cm above the ground surface (Figure 23). No natural stones are present in the immediate vicinity of the site. The site is situated 3 m south of an east-west property fence line dividing the James Earl Anderson property and the John R. Oser property. This location is in the northeast corner of the field in which 14B0112 and 14B0115 are located and is just inside a grove of riparian forest. The western edge of the wood is marked by an old north-south fence line. The stones are along an east-west axis with the first two stones approximately 19 m apart. The second and third are about 5 m apart. The third, fourth and fifth stones are equally spaced at 2-3 m intervals.

14B0116 was reported by Mr. Vernon Hixon, a local elderly retired farmer. He stated that his father had shown them to him when he was young and that the stones had been there when his father was young. His father was under the impression that the site was an "Indian cemetery."

The evidence seems to point to site 14B0116 being some type of cemetery, although it may well be an early Historic cemetery rather than an aboriginal cemetery. The precise identification of the site will have to be determined by future investigation. Permission could not be obtained to do any testing on Mr. Oser's property. Furthermore, it was felt that it was not appropriate to disturb the cemetery prior to finalization of Corps of Engineer plans to construct Fort Scott Lake. The site may be historically significant and, should the U.S. Army Corps of Engineers proceed with the construction of Fort Scott Lake, steps should be taken to identify the site and determine an appropriate future course of action.

14B0204

14B0204 is located on a prominent terrace above the confluence of Paint Creek and Pawnee Creek (Figure 25). The site was first reported by Brown (1964) and was purportedly tested by Bradley and Harder in 1968, although it is only briefly mentioned in the text (Bradley and Harder 1974:13). Field notes from the 1968 investigations do not list the site as having been tested. Brown described the site as being located along a terrace extending from the southwest of a cultivated field around to the northeast. Brown reported three grit tempered cordmarked body sherds, one triangular corner-notched dart point, three knife fragments, two stemmed scrapers, one core, four modified flakes and eight pieces of debitage. He suggested a Plains Woodland or Central Plains Tradition cultural affiliation for the site.

Pedestrian survey indicated that the site consisted of two major areas referred to as Areas A and B (Figure 25). Area A consists of a light scatter of burnt limestone cobble and lithics on the eastward

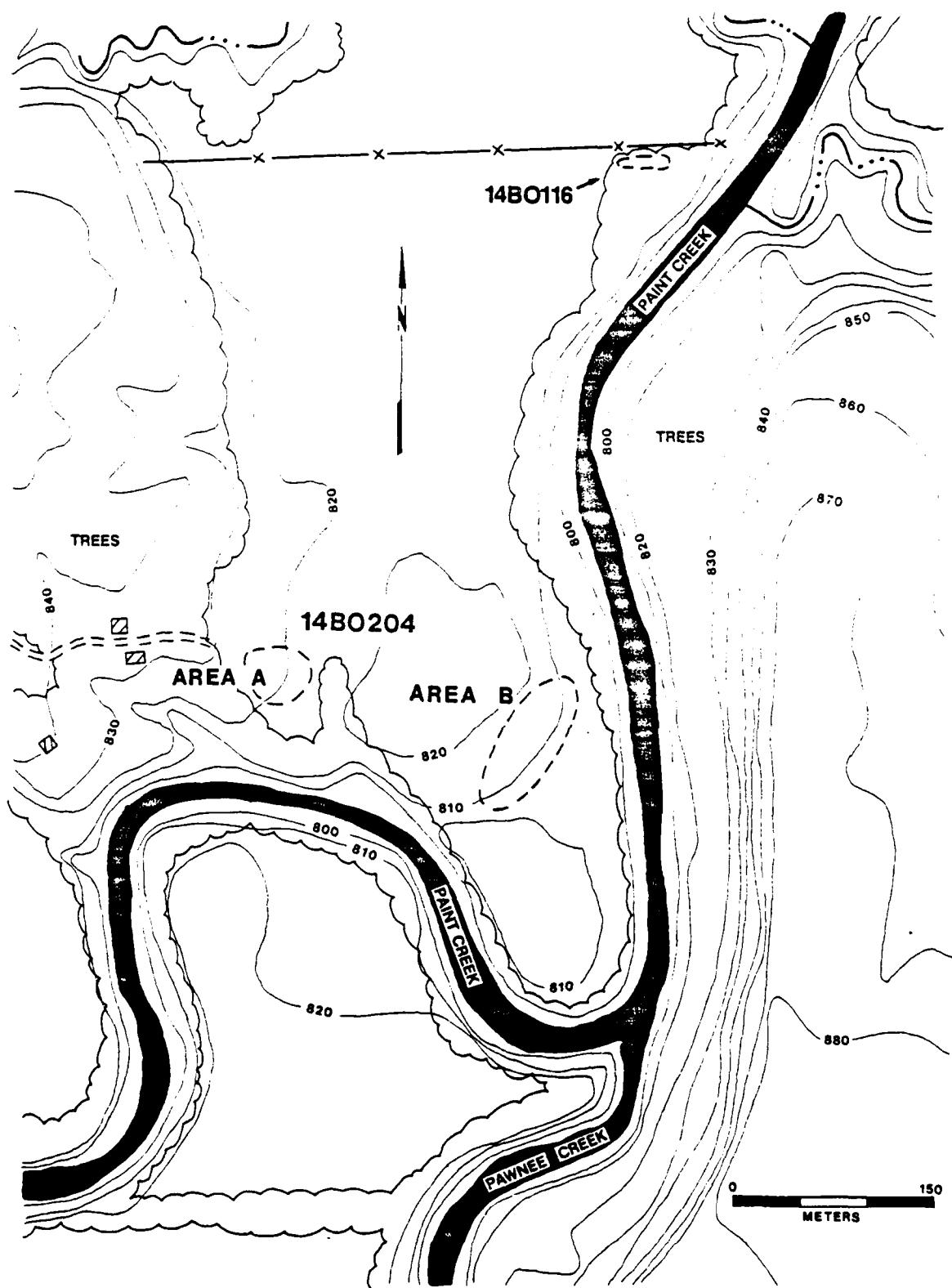


Figure 25. Location of 14BO116 and 14BO204.

sloping edge of the terrace with an associated light lithic scatter along the terrace slope. A few fragments of brick and pieces of glass were observed, but these artifacts are probably associated with buildings from a now deserted farmstead just west of the site and indicate an historic component at the site. The material collected during the surface investigations include three edge-modified flakes, four flakes and four pieces of shatter. Three specimens appear to have been thermally altered.

The artifact assemblage recovered from Area B consists of nine pieces of debris including a chipped stone tool, lithic manufacturing debris, ceramics and a groundstone tool. One tan body sherd with a thickness of 11 mm was found. This specimen has a brushed surface finish and is tempered with indurated clay or grog. The chipped stone tool is an ovate light-duty biface fragment. Two flakes, two chunks and one piece of shatter were also recovered from the site. A single chunk appears to be thermally altered. The groundstone tool is a well shaped mano made from a thin, fine grained sandstone cobble. One piece of burnt rock was also recovered from the site.

14B0204 consists of two light scatters of prehistoric lithics located on the T-1 terrace of Paint Creek. The sole diagnostic artifact recovered from the 1982 investigation is a thick, brushed body sherd. This sherd evidences a Plains Woodland or Plains Village cultural affiliation confirming Brown's original identification. Permission to conduct subsurface testing could not be obtained from the landowner or tenant and the data recovered from the surface survey is insufficient for evaluation of 14B0204. Should the Corps proceed with its plans for the construction of Fort Scott Lake, 14B0204 should be tested to determine its eligibility for the National Register of Historic Places.

VII. GEOMORPHOLOGICAL INVESTIGATION

The primary objectives of the geomorphological investigation at Fort Scott Lake were to (1) obtain paleoecological data for environmental reconstruction, (2) identify the terrace sequence in the lake area and (3) correlate archaeological deposits with geomorphic data. Information from these analyses were used to formulate a predictive model of cultural resources. More specifically, we determined the potential for finding archaeological sites associated with different alluvial deposits in the project area.

PALEOENVIRONMENTAL RECONSTRUCTION

Paleohydrology

There have been relatively few geomorphic investigations of river valleys in southeastern Kansas. Hershey (1896) identified Pleistocene terraces of the Spring River in extreme southeastern Cherokee County, Kansas. Alluvial terraces and floodplain deposits in eastern Kansas have been discussed by Frye and Leonard (1952). Jamkhindikar (1967) examined clay mineralogy, sedimentary parameters and heavy mineral content of Pleistocene alluvial terrace (Illinoian) and floodplain deposits (Wisconsin) of the Neosho River in southeastern Kansas. The terrace sequence in the Marmaton River valley has not been identified in any previous studies.

Although there have been few geomorphic studies of river valleys in southeastern Kansas, this portion of the East-Central Plains is encircled by rivers that have yielded stratigraphic information which has been used to reconstruct the regional alluvial chronology for the Late Holocene. As in many investigations of river terraces, the only fluvial changes that are well documented for the Quaternary in the Central Plains are the cyclic patterns of aggradation, stability and degradation. For example, radiocarbon dates from Late Archaic occupations preserved in a buried paleosol indicate that the upper Walnut River valley in south-central Kansas was slowly aggrading between ca. 4000 and 2000 B.P. (Artz 1980). During this same period, as the upper Walnut valley experienced quasi-stability, floodplains at the Coffey site on the Big Blue River in north-central Kansas (Schmits 1980) and on the lower Pomme de Terre River in western Missouri (Haynes 1976) were also relatively stable. However, between 4000 and 2000 B.P., streams of the Verdigris River basin in northeastern Oklahoma were rapidly aggrading, according to Henry (1980) and Hall (1980). Vegetational and geological differences between the two regions, coupled with climatic shift, may account for the out-of-phase relationship (Johnson et al. 1981).

The divergence of thought concerning climatic influences on river terrace formation (Frye 1961; Schumm 1965) has led some Quaternary stratigraphers to conclude that cycles of fluvial erosion, deposition

and stability are unreliable indicators of climatic change in the Quaternary (Morrison 1968). Unfortunately, in many continental regions, Quaternary fluvial deposits provide the only easily studied record of paleoclimate (Baker and Penteado 1977). In the present study, we anticipated that paleoenvironmental inferences could be gleaned from a broad spectrum of fluvial geomorphic evidence. Terrace forms, paleochannel patterns, fluvial sediments and associated paleosols were investigated.

Paleopedology

In order to identify paleo-landscapes in the project area, a major objective of the geomorphic investigation was to locate and describe paleosols. A paleosol is a soil which has formed on a landscape of the past, usually under conditions different from the present (Ruhe 1965; Working Group on the Origin and Nature of Paleosols 1971). Interpreting the paleosol record is important to the present study because prehistoric cultural resources are often found in association with paleo-landscapes.

There are three basic kinds of paleo-landscapes or paleosols. They are buried, exhumed and relict (Ruhe 1969:68). Buried paleosols are soils that were formed on a landscape during the past and were buried by sedimentation subsequent to pedogenesis (Ruhe and Daniels 1958). Consequently, buried paleosols have features resulting primarily from the pedogenic processes that operated when the soils formed on the land surface. Buried paleosols have been, and continue to be, a major criterion for differentiating between alluvial deposits of different ages.

Ruhe (1965) used the term "exhumed soils" for paleosols that were buried but have since been re-exposed at the land surface by erosion. These paleosols have relict characteristics that are modified to some extent by modern pedogenesis. Exhumed soils are usually recognized by tracing a paleosol from buried occurrences and demonstrating that, where it is uncovered, the former mantle has been stripped away (Morrison 1967). Ruhe (1965) used this technique to identify the widely exposed Sangamon soil in many parts of the Midwest and the Central Plains. Prill and Riecken (1958) and Ruhe et al. (1967) noted that Late Sangamon soils have also been exhumed in large areas of the Midwest. The erosion of loess usually results in the outcrop pattern of these paleosols (Ruhe 1965).

A relict paleosol is one which has remained exposed on the paleogeomorphic surface after attaining its diagnostic profile characteristics, without burial by younger deposits. Thorp (1949) first proposed the term "relict soils" for the "surface remains of ancient soils." Relict paleosols have been exposed to all of the weathering and other surficial processes that occurred since the development of the land surface on which they formed. Consequently, these soils usually display both modern and relict features (Morrison 1967).

For the purpose of this study, we concentrated on identifying buried alluvial paleosols in the project area. Buried soils, especially

Al horizons, are useful indicators for locating potential archaeological sites. A buried paleosol within an alluvial sequence is generally interpreted as indicating a significant reduction, or cessation, of alluviation followed by, or concomitant with, an episode of soil formation (Johnson et al. 1981:652). Buried Al horizons represent previous land surfaces which were exposed for sufficient periods of time to develop recognizable soil profile characteristics. Thus, they represent stable land surfaces. Such a period of "stability" is usually interpreted to be related to climatic or environmental stability (Johnson et al. 1981:652). If one assumes that the probability of cultural utilization of a particular landscape position is equal for each year, it follows that the surfaces which remain exposed for the longest time would represent those with the highest probability of containing cultural remains (Hoyer 1980:61). Since the paleosols represent these surfaces, evidence for occupations would most likely be associated with them. However, as Hoyer (1980:61) pointed out, an archaeological site may be found where no evidence of soil development exists. An occupation could take place over a period of a few years without a trace of soil development. Deposition, followed a few years later by occupation and then subsequent deposition would result in cultural materials incorporated within alluvium unmodified by soil development.

Alluvial soils within the project area were also examined for evidence of climatic change during the Quaternary. The fluctuation of climate characteristic of the Quaternary presumably would lead to successive periods of intensification and weakening of soil-forming processes. This study attempts to determine changes in the soil-forming environment, particularly climate, through the recognition and interpretation of past and present soil-forming processes in southeastern Kansas.

In the project area, which is transitional between humid and moist subhumid climates, soils are useful indicators of past climatic changes. If there has been climatic instability along the southeastern fringe of the Central Plains as suggested in the literature (Henry 1978), the soils on the floodplain and terraces of the Marmaton River may have formed in response to ancient climates. Therefore, the soils may be considered out-of-phase with the modern soil forming environment, allowing one to use the soils to infer past climatic changes.

METHODOLOGY

Identification of the terrace sequence in the project area involved field investigations and an assessment of the recent soil survey for Bourbon County. Detailed maps in the Soil Survey of Bourbon County, Kansas (Bell and Fortner 1981) show the distribution of soil series throughout the county. The soil series are grouped according to their geomorphic setting in Table 12. These data were used to prepare a generalized geomorphic map of the project area (Figure 26).

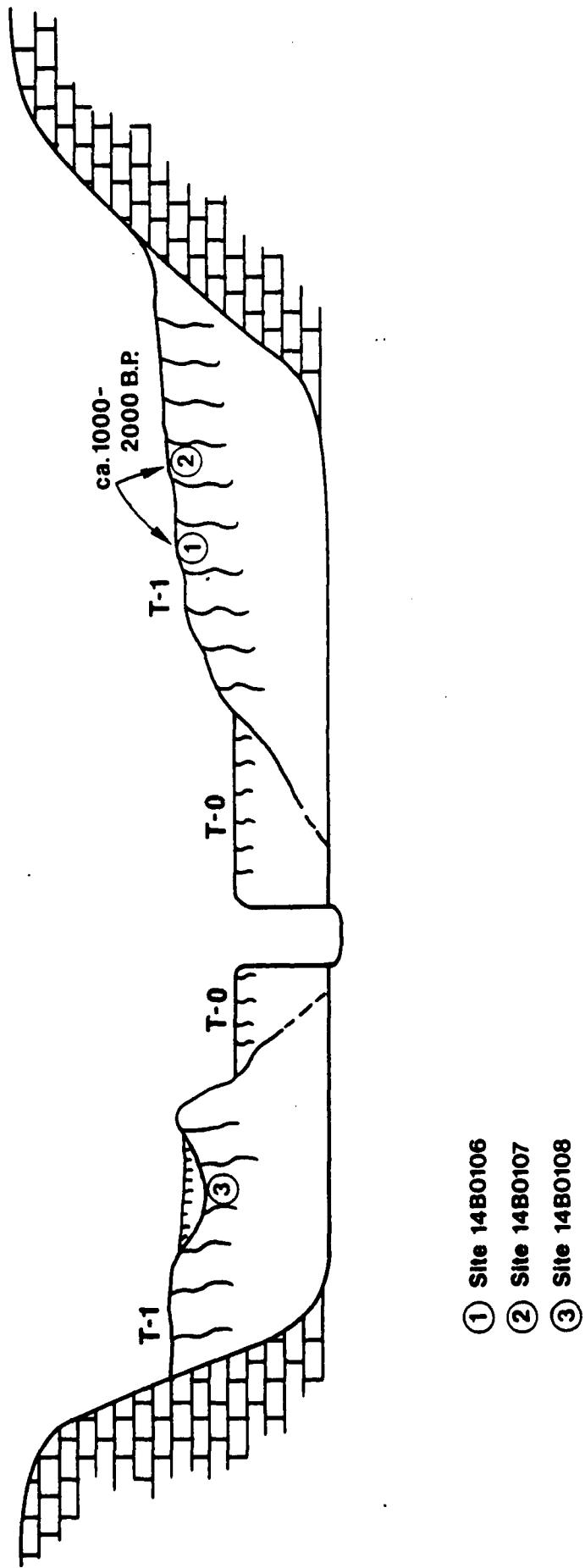


Figure 26. Generalized cross-section of the Marmaton River Valley, showing soil-geomorphic surfaces and their ages, based on archaeological association.

Table 12. Association of soils to geomorphic setting.

GEOMORPHIC SETTING	SOIL SERIES
Modern Floodplain (T-0)	Verdigris
Alluvial Terraces (T-1)	Mason, Leanna, Lanton
Colluvial Hillsides	Ringo, Dennis, Zaar
Upland Divides	Parsons, Bates, Kenoma, Catoosa, Clareson, Bolivar, Eram, Hector, Tamaha

Source: E.L. Bell and J.R. Fortner, Soil Survey of Bourbon County, Kansas, U.S. Department of Agriculture, 1981.

The geomorphic investigation also included field analyses of alluvial deposits in the project area. Limited access to private lands precluded a comprehensive drilling program. Instead, floodplain and terrace deposits were examined in stream-bank exposures and in several backhoe trenches at sites 14B0106, 14B0107 and 14B0108. The backhoe trenches provided opportunities to describe sediments and soil profiles at considerable depths.

Soil profiles in stream-bank exposures and backhoe trenches were cleaned with trowels, exposing fresh, vertical soil surfaces. The profiles were photographed and described according to procedures outlined in the Soil Survey Manual (Soil Survey Staff 1951).

TERRACE SEQUENCE AND ALLUVIAL CHRONOLOGY

The major alluvial valleys in the project area are characterized by undulating paired and unpaired terraces adjacent to the nearly level floodplains. The terrace and floodplain deposits are designated as T-1 and T-0, respectively. In the lower portion of the Marmaton drainage basin, remnants of an early Holocene or late Pleistocene terrace, referred to as the T-2 terrace, are confined to uplands (E. L. Bell: personal communication). Erosion has apparently removed all traces of the T-2 terrace within the project area. Figure 26 shows a generalized cross-section of the Marmaton valley between Redfield and Fort Scott, Kansas.

The T-0 sediments are restricted generally to narrow belts of lateral accretion deposits immediately adjacent to present-day stream channels. Nowhere is the T-0 surface more than 200 m wide. Silty alluvium forming T-0 deposits has Verdigris soils developed in its surface. These soil series are classified as Cumulic Hapludolls (Mollisols). The subgroup designation of the Verdigris soil, Cumulic, indicates that this series formed in material which accumulated during the development of the surface soils. Constant aggradation has inhibited the formation of soil horizons in both series, resulting in weakly developed AC profiles. A profile description of Verdigris soils formed in the T-0 surface at site 14B0106 is presented in Table 13.

The T-1 scarps, where present, are 1-2 m above T-0 surfaces. The T-1 terrace sediments are generally unstratified silts and clays. The lack of stratification in these sediments may be a result of bioturbation and soil-forming processes. Most of the soils formed in the surface of the T-1 terraces belong to the Mason and Leanna series. These soils are classified as Typic Argiudolls, indicating the presence of an argillic horizon.

Diagnostic artifacts from archaeological sites were used to estimate the ages of the alluvial deposits in the project area. Archaeological investigations in the Marmaton valley document a 4500-year cultural sequence, extending from Late Archaic to Euro-American times. Most of the archaeological sites are associated with the valley's T-1 terraces (Table 1). Plains Woodland and Historic sites generally occur on the T-1 surface, while older sites (Archaic?) are buried beneath it. Thus, the T-1 surfaces are at least 1000 years old. No temporally diagnostic artifacts have been found on or within the younger T-0 deposits.

In addition to relative dating from prehistoric cultural materials, the age of terraces was inferred from soils-geomorphic evidence in the project area. Most of this evidence was obtained from investigations of soils developed on T-1 terraces at sites 14B0106, 14B0107 and 14B0108.

The soils on the T-1 terrace at site 14B0106 are mapped as Mason soils (Mollisols) in the Soil Survey of Bourbon County, Kansas (Bell and Fortner 1981). However, two backhoe trenches excavated in the T-1 terrace exposed soils which do not resemble the Mason series. Instead, the terrace soils are morphologically similar to Paleudalfs (Alfisols) which occur as relict paleosols on upland, bedrock surfaces in southeastern Kansas. The T-1 soils have thick, strongly developed argillic horizons, or B horizons, characterized by the accumulation of alluvial clay translocated from the surface horizons. The zone of maximum clay accumulation in these soils (B22t horizon) has yellowish red mottles, thin clay skins on ped surfaces, and many fine manganese and iron concretions. Descriptions of the T-1 soils at site 14B0106 are presented in Tables 14 and 15.

The presence of a thick, strongly developed argillic horizon in the T-1 soils indicates that the land surface has been relatively stable, allowing a "mature" soil to form in the alluvium. Studies from various regions of humid and subhumid North America suggest that argillic

Table 13. Soil profile description in Trench 3 at 14B0106.

Site No.:	14B0106, Trench 3
Landform:	Floodplain of the Marmaton River
Slope:	0-1%
Vegetation:	Cultivated
Exposure:	Backhoe trench
Soil Classification:	Verdigris series; Cumulic Hapludoll (Mollisol)

<u>Horizon</u>	<u>Depth (cm)</u>	<u>Description</u>
Ap	0-15	Very dark grayish brown (10YR3/2) silt loam, dark grayish brown (10YR4/2) dry; weak fine granular structure; slightly hard, friable; slightly acid; abrupt smooth boundary.
A12	15-63	Very dark grayish brown (10YR3/2) silt loam, dark grayish brown (10YR4/2) dry; moderate medium granular structure; slightly hard, friable; slightly acid; gradual smooth boundary.
AC	63-101	Dark brown (10YR3/3) silt loam, brown (10YR5/3) dry; weak fine subangular blocky structure; slightly hard, friable; slightly acid; gradual smooth boundary.
C	101-145+	Dark brown (10YR4/3) silt loam, light brownish gray (10YR6/2) dry; massive; slightly hard, friable; slightly acid.

horizons develop in 1000 to 2500 years (Bilki and Ciolkosz 1977; Parsons et al. 1962, 1970; McComb and Loomis 1944; Ruhe 1969:167). Thus, the 1000 B.P. date established by archaeological associations is probably a minimal date for T-1 surface stability.

Soil-geomorphic analyses at site 14B0107 also provided information that is useful in understanding the alluvial chronology of the Marmaton valley. Two backhoe trenches were excavated in the T-1 terrace at this site. Profile descriptions of the soils exposed in the trenches are presented in Tables 16 and 17. These soils belong to the Leanna series. Several observations are important here. First, the terrace soils have an argillic horizon. Although the horizon is not as thick or as strongly developed as the one formed in the T-1 sediments at site 14B0106, its presence indicates a long period of surface stability for

Table 14. Soil profile description in Trench 1 at 14B0106.

Site No.:	14B0106, Trench 1	
Landform:	T-1 terrace of the Marmaton River	
Slope:	1-2%	
Vegetation:	Cultivated	
Exposure:	Backhoe trench	
Soil Classification:	Paleudalf?	
<u>Horizon</u>	<u>Depth (cm)</u>	<u>Description</u>
Ap	0-20	Very dark grayish brown (10YR3/2) silt loam, dark grayish brown (10YR4/2) dry; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.
A12	20-80	Very dark grayish brown (10YR3/2) silt loam (10YR3/3) dry; moderate medium granular structure; friable, slightly acid; very abrupt smooth boundary.
B1	28-48	Yellowish brown (10YR5/6) silty clay loam, brown (7.5YR5/4) dry; common very dark grayish brown (10YR3/2) mottles; moderate fine subangular blocky structure; hard, firm; strongly acid; gradual smooth boundary.
B12t	48-86	Dark yellowish brown (10YR4/6) silty clay, brown (7.5 YR5/4) dry; common strong brown (7.5YR4/6) and yellowish red (5YR5/8) mottles; moderate medium blocky structure; hard, firm; common light gray (10YR7/2) silt coating on faces of peds; few fine black concretions; gradual smooth boundary.
B22t	86-137	Dark yellowish brown (10YR4/6) silty clay, brown (7.5 YR5/4) dry; common strong brown (7.5YR4/6) and yellowish red (5YR5/8) mottles; moderate medium blocky structure; hard, firm; thin clay skins on ped surfaces; common fine black concretions; acid; gradual smooth boundary.

Table 14 continued.

B3	137-177	Yellowish brown (10YR5/6) silty clay, brownish yellow (10YR6/6) dry; common strong brown (7.5YR4/6) and yellowish red (5YR5/8) mottles; moderate medium blocky structure; hard, firm; common fine black concretions; slightly acid; gradual smooth boundary.
C	177-205	Dark yellowish brown (10YR4/6) silty clay loam, yellowish brown (10YR5/6) dry; massive; hard, firm; about 10 percent fine gravel, by volume; common fine black concretions; mildly alkaline; abrupt smooth boundary.
R	205+	Limestone

Table 15. Soil profile description in Trench 2 at 14B0106.

Site No.: 14B0106, Trench 2
 Landform: T-1 terrace of the Marmaton River
 Slope: 1-2%
 Vegetation: Cultivated
 Exposure: Backhoe trench
 Soil Classification: Paleudalf?

<u>Horizon</u>	<u>Depth (cm)</u>	<u>Description</u>
Ap	0-15	Very dark grayish brown (10YR3/2) silt loam, dark grayish brown (10YR4/2) dry; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.
A12	16-30	Very dark grayish brown (10YR3/2) silt loam; dark brown (10YR3/3) dry; moderate medium granular structure; friable; slightly acid; very abrupt smooth boundary.
B1	30-50	Yellowish brown (10YR5/6) silty clay loam, brown (7.5YR5/4) dry; common very dark grayish brown (10YR3/2) mottles; moderate fine subangular blocky structure; hard, firm; strongly acid; gradual smooth boundary.

Table 15 continued.

B21t	50-96	Dark yellowish brown (10YR4/6) silty clay, brown (7.5YR5/4) dry; common strong brown (7.5YR4/6) and yellowish red (5YR5/8) mottles; moderate medium blocky structure; hard, firm; common light gray (10YR7/2) silt coatings on faces of ped; few fine black concretions; gradual smooth boundary.
B22t	96-137	Dark yellowish brown (10YR4/6) silty clay, brown (7.5YR5/4) dry; common strong brown (7.5YR4/6) and yellowish red (5YR5/8) mottles; moderate medium blocky structure; hard, firm; thin clay skins on ped surfaces; common fine black concretions; acid; gradual smooth boundary.
B3	137-198	Yellowish brown (10YR5/6) silty clay, brownish yellow (10YR6/6) dry; common strong brown (7.5YR4/6) and yellowish red (5YR5/8) mottles; moderate medium blocky structure; hard, firm; common fine black concretions; slightly acid; gradual smooth boundary.
C	198-233	Dark yellowish brown (10YR4/6) silty clay loam, yellowish brown (10YR5/6) dry; massive; hard, firm; about 10 percent fine gravel, by volume; common fine black concretions; mildly alkaline; abrupt smooth boundary.
R	233	Limestone

the T-1 surface. Second, the relative development of soils on the T-1 terrace implies an antiquity that is confirmed by relative dating. A Plains Woodland occupation in the upper 50 cm of the T-1 terrace at 14BO107 indicates that the terrace surface is at least 1000-2000 years old. Finally, a buried cultural strata was exposed at a depth of 1.2-1.5 m below the T-1 surface in Trench 1. This cultural layer does not occur in a buried A horizon. Instead, it is within the B horizon of the surface soil. This indicates that the T-1 deposit formed through slow but constant aggradation. Deposition followed a few years later by occupation and then subsequent deposition would have resulted in a cultural horizon, such as the one at 14BO107, incorporated within the T-1 alluvium. The lack of a buried A horizon indicates that the previous land surface represented by the cultural stratum was not

Table 16. Soil profile description in Trench 1 at 14BO107.

Site No.:	14BO107, Trench 1	
Landform:	T-1 terrace, confluence of the Marmaton River and Paint Creek	
Slope:	2-3%	
Vegetation:	Cultivated	
Exposure:	Backhoe trench	
Soil Classification:	Leanna series; Typic Argindoll (Mollisol)	
<u>Horizon</u>	<u>Depth (cm)</u>	<u>Description</u>
Ap	0-15	Very dark grayish brown (10YR3/2) silt loam, gray (10YR5/2) dry; weak fine granular structure; slightly hard, friable; slightly acid; abrupt smooth boundary.
A2	15-28	Dark gray (10YR4/1) silt loam, gray (10YR6/1) dry; weak very fine granular structure; slightly hard, friable; strongly acid; clear wavy boundary.
B2t	28-73	Black (10YR2/1) silty clay, dark gray (10YR4/1) dry; few fine distinct dark yellowish brown (10YR4/4) and yellowish brown (10YR5/6) mottles; moderate medium blocky structure; very hard, very firm; common charcoal flecks; medium acid; gradual smooth boundary.
B3	73-208	Dark grayish brown (10YR4/2) silty clay loam, grayish brown (10YR5/2) dry; common medium distinct yellowish brown (10YR5/4) and brownish yellow (10YR6/6) mottles; weak coarse subangular blocky structure; hard, firm; few charcoal flecks; neutral.

Table 17. Soil profile description in Trench 2 at 14BO107.

Site No.:	14BO107, Trench 2	
Landform:	T-1 terrace, confluence of the Marmaton River and Paint Creek	
Slope:	1-2%	
Vegetation:	Cultivated	
Exposure:	Backhoe trench	
Soil Classification:	Leanna series; Typic Argiudoll (Mollisol)	
<u>Horizon</u>	<u>Depth (cm)</u>	<u>Description</u>
Ap	0-18	Very dark grayish brown (10YR3/2) silt loam, gray (10YR6/1) dry; weak fine granular structure; slightly hard, friable; slightly acid; abrupt smooth boundary.
A2	18-22	Dark gray (10YR4/1) silt loam, gray (10YR6/1) dry; weak fine granular structure; slightly hard, friable; strongly acid; clear wavy boundary.
B2t	22-81	Very dark brown (10YR2/2) silty clay; very dark grayish brown (10YR3/2) dry; few fine distinct dark yellowish brown (10YR4/4) and yellowish brown (10YR5/6) mottles; moderate medium blocky structure; very hard, very firm; common large chert fragments; common charcoal flecks; medium acid; gradual smooth boundary.
B3	81-223	Dark grayish brown (10YR4/2) silty clay loam, grayish brown (10YR5/2) dry; common medium distinct yellowish brown (10YR5/4) and brownish yellow (10YR6/6) mottles; weak coarse subangular blocky structure; hard, firm; few charcoal flecks; neutral; gradual smooth boundary.
C	223-251+	Grayish brown (10YR5/2) silty clay loam, brown (10YR5/3) dry; common yellowish brown (10YR5/6) mottles; massive; hard, firm; slightly alkaline.

exposed for a long enough period to be modified by soil-forming processes which operated at that time. Thus, the cultural materials are incorporated within a B horizon that formed since the T-1 surface became stable.

The T-1 terrace at site 14B0108 has a gently undulating surface with a sequence of ridges and swales. The soils on this irregular surface are mapped as the Mason series in the Soil Survey (Bell and Fortner 1981). The Mason soils are morphologically similar to the Leanna soils formed in T-1 sediments at site 14B0107. However, the Mason soils lack an A2 horizon and are better drained than the Leanna series.

Test pits were excavated on two adjacent ridges at site 14B0108. These pits exposed the strongly developed argillic horizon of the Mason soil. A backhoe trench was also excavated at the site, crosscutting a depressional area between the two ridges. The trench exposed a buried A horizon approximately 50 cm beneath the land surface. A dense cultural stratum occurs within the upper 50 cm of the buried A horizon. The dark, silty buried A horizon overlies a strongly developed argillic horizon. This buried paleosol resembles the Mason soil formed on the high surfaces of the T-1 terrace. Table 18 provides a description of the profile exposed in the backhoe trench.

A surface soil has formed in the silty sediments overlying the buried paleosol at site 14B0108. The presence of an AB profile in these sediments evidences a relatively long period of surface stability since the paleosol was buried. Cultural materials were not found on or within the sediments above the buried paleosol.

The depressional area at site 14B0108 appears to represent a gully or swale which was filled with overbank silt deposits. Overbank deposition was apparently localized in the Marmaton drainage basin. Elsewhere, the T-1 surface remained exposed, as indicated by the strongly developed surface soils and by the surficial and shallowly buried Plains Woodland sites, such as 14B0106 and 14B0107.

To summarize, geomorphic and archaeological evidence indicates that T-1 terraces in the project area are at least 1000 years old, and probably much older. The age of the terraces was inferred from diagnostic artifacts and from the morphology of soils formed on the surfaces of terraces.

The T-1 terraces appear to have formed through slow but constant aggradation. The presence of a deeply buried cultural stratum in the B horizon of the T-1 soil at 14B0107 indicates that development of the terrace was interrupted by brief episodes of surface stability.

Most of the soils on the T-1 terraces have remained exposed as strongly developed relict paleosols, indicating a long period of surface stability. This period of stability was interrupted by localized deposition in the form of overbank alluviation. Flooding and concomitant sedimentation resulted in the burial and preservation of soils and cultural materials in favorable locations, such as the

Table 18. Soil profile description in Trench 1 at 14B0108.

Site No.:	14B0108, Trench 1	
Landform:	Gully fill on the T-1 terrace of Paint Creek	
Slope:	1-2%	
Vegetation:	Cultivated	
Exposure:	Exposed	
Soil Classification:	Mason series: Typic Argiudoll (Mollisol)	
<u>Horizon</u>	<u>Depth (m)</u>	<u>Description</u>
Ap	0-18	Very dark grayish brown (10YR3/2, moist) silt loam; weak fine granular structure; slightly hard, friable; abrupt smooth boundary.
B1	18-48	Very dark grayish brown (10YR3/2, moist) silt loam; weak fine subangular blocky structure; ahrd, firm; very abrupt smooth boundary.
IIA1	48-70	Very dark gray (10YR3/1, moist) silt loam; very fine subangular blocky structure, common charcoal flecks; slightly hard, friable; gradual smooth boundary.
IIB21t	70-100	Very dark gray (10YR3/1, moist) silty clay; fine subangular blocky structure; common charcoal flecks; hard, firm; gradual smooth boundary.
IIB22t	100-160+	Dark brown (10YR3/3, moist) silty clay; very dark grayish brown (10YR3/2) coatings on ped surfaces; moderate medium subangular blocky structure; thin clay skins on ped surfaces; very hard, very firm.

depressional area at site 14B0108. It is likely that localized deposition accompanied a period of increased fluvial activity, resulting in channel entrenchment and the abandonment of T-1 surfaces.

REGIONAL CORRELATION OF HOLOCENE LANDSCAPES

The buried paleosol identified in T-1 sediments at site 14B0108 represents a period of environmental stability. If this episode of stability was regional in scope, it should be reflected in alluvial

soils at other localities in the southeastern margin of the Central Plains. Buried paleosols on the T-1 terraces of the Big Blue River in north-central Kansas (Artz 1980) and on the first terraces of the Osage and Pomme de Terre rivers in western Missouri (Lees et al. 1982; Haynes 1976) indicate a period of bioclimatic stability around 2000 B.P. Of greater interest to the present study are the alluvial soils and the terrace sequence reported by Artz (1980) in the nearby Walnut River valley. A buried paleosol on the T-1 terrace of the Walnut River formed between 4000 and 2000 radiocarbon years B.P. Artz refers to this interval as Phase A. The Phase A soil is exposed as a relict paleosol on most of the T-1 surfaces in the Walnut valley. However, burial of this soil has occurred in colluvial footslopes and fan deposits at the edge of the valley, and on abandoned levees and channels active between 2000 and 1000 B.P. Artz suggests that localized deposition during this period was accompanied by increased fluvial activity, culminating in channel entrenchment and the abandonment of T-1 surfaces.

Allowing for differences in alluvium lithology, the relict paleosols on T-1 surfaces in the project area are similar to relict paleosols in the Walnut valley both in their morphology and soil-geomorphic relationship. They are probably formed at the top of the equivalent of Artz's Phase A deposit and are locally buried by his Phase B sediment. This gives the T-1 terrace in the Marmaton valley a probable minimum age of about 1000 radiocarbon years B.P.

Similarities in the soil-geomorphic evidence from the Marmaton and Walnut valleys suggest that the two river systems responded to the same climatically induced hydrologic change. Artz (1980) suggests that gradual, valley-wide aggradation during Phase A, prior to 2000 B.P., represents an adjustment to a greater frequency of frontal storms generating wide-spread, but low intensity floods. During Phase B, colluvial activity at the valley edges indicates ongoing upland erosion. According to Artz, this suggests a sudden increase in rainfall, as would be expected with a shift from frontal to convectional storm dominance. He suggests that Phase B levee building points to increased sediment loads in streams, probably deposited during increasingly periodic surges in discharge. This also would be an expected consequence of increasing frequency of convectional storms.

The geomorphic-climatic model presented by Artz (1980) associates the upper Walnut alluvial chronology with the meteorological mechanisms which Borchert (1950) and Bryson (1966) have suggested underlie Plains climatic change. They have shown that the prairie of central North America is occupied by a wedge of air, dried by subsidence on crossing the Rockies, which is driven far eastward by the westerlies. The stronger the westerlies, the farther east the dry wedge should push, and with it the associated biota. This bioclimatic model, which involves shifting dominance of air masses over the grasslands in response to strengthened or weakened westerly flow, has provided succinct climatological explanations for Quaternary biogeomorphic shifts at the margins of several North American biomes, including the boundaries of the northern Boreal Forest (Sorenson 1977; Bryson 1966); the Prairie-Forest transition in east-central Texas (Mandel 1980; Baker and Penteado 1977; Wallis 1976; Sorenson et al. 1976); and the Prairie-Deciduous

Forest ecotone in the upper Midwest (Davis 1977). The bioclimatic model is relevant because the Marmaton valley is in a transitional zone, or ecotone, between the oak-hickory forest of western Missouri and the bluestem prairie of eastern Kansas. The boundaries of these vegetative regions are controlled generally by climate. It is plausible, therefore, to postulate that fluctuations in the strength of the westerlies have induced biogeomorphic change in the Marmaton valley during the Late Holocene.

VIII. DISCUSSION AND RECOMMENDATIONS FOR FUTURE MANAGEMENT OF CULTURAL RESOURCES AT FORT SCOTT LAKE

The proposed Fort Scott Lake project is located on the Marmaton River drainage in southeast Kansas. The Marmaton Valley, a tributary of the Osage River, is incised in Pennsylvanian series bedrock of the Kansas City Group which chiefly consists of limestone and shale. The physiography of the area results from the westward dipping alternating layers of these rock units which have resulted in the development of a series of northeast-southeast trending cuestas. The Marmaton River is a meandering stream with a low gradient and high sinuosity. Topographically high terraces border a narrow alluvial floodplain. Soils in the region are formed on material weathered from bedrock and on alluvium and eolian deposits. The native vegetation of the area consists of bluestem prairie on the uplands, oak-hickory forest on the slopes and hillsides and floodplain forest along the stream terraces and floodplains.

Previous archaeological work in the area includes a survey conducted by the Smithsonian Institution River Basin Surveys (Brown 1964) and two survey, testing and excavation projects conducted by the University of Kansas in the late 1960s (Bradley 1969, Bradley and Harder 1974). The results of these investigations located 23 sites within or near the project area. The majority of these are located on terraces bordering the Marmaton and its tributaries. Several are located on uplands. These sites principally appear to date to the Plains Woodland period, although the cultural affiliation of many is not known at the present.

The present project consisted of an intensive survey and evaluation of a ten percent sample of the proposed Fort Scott Project area along with geomorphological investigations designed to study the terrace sequence in order to define areas likely to contain buried sites. The project had three major research goals: (1) construction of a local cultural sequence, (2) delineation of the terrace sequence and alluvial chronology and (3) reconstruction of settlement-subsistence patterns. It was thought that these goals would be most useful in predicting the number and nature of cultural resources in the project area and in the event that plans for the construction of Fort Scott Lake proceed.

CULTURAL SEQUENCE OF THE FORT SCOTT AREA

Based on the available data, human occupation of the Fort Scott area extends from the Late Archaic through the Historic period. A total of thirty-six sites are presently known for the project area and immediate vicinity. Included in this total are 23 previously located sites and thirteen newly recorded sites located during the 1982 survey. Four of the newly recorded sites have multiple components bringing the total number of known components to 40. Table 19 lists the number and percentage of sites falling into the four cultural-historical periods known in the project area.

Table 19. Cultural affiliation of components of previously recorded and newly recorded sites in the vicinity of the Fort Scott project area.

	PREVIOUSLY RECORDED		NEWLY RECORDED		TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Archaic	0	0	2	11.8	2	5.0
Plains Woodland	6	26.0	4	23.5	10	25.0
Historic Aboriginal	1	4.3	1	5.9	2	5.0
Historic Euro-American	2	8.7	4	23.5	6	15.0
Unknown	14	60.9	6	35.3	20	50.0
TOTAL	23	99.9	17	100.0	40	100.0

As Table 19 indicates, two sites (five percent) date to the Archaic period and most likely to the Late Archaic. A large number of the sites (25 percent) date to the Plains Woodland period, a small number have a Historic Aboriginal cultural affiliation (five percent), and a fairly large number are Historic Euro-American sites (15 percent). The highest percentage of sites are of unknown cultural affiliation. One noteworthy feature about the data presented in Table 19 is that the cultural affiliations of the present survey closely match those of previous work in the area. The early survey work and the present work indicate minimal Archaic occupation in the area, a high preponderance of Plains Woodland sites, a small number of Historic Aboriginal sites, and a fairly substantial number of Historic Euro-American sites.

At the present time, there is a lack of substantive evidence for early Paleo-Indian and Early or Middle Archaic occupations of the Fort Scott area. This is inconsistent with reported data from areas immediately to the east and west of the Fort Scott area. For example, downstream of the Stockton Lake area, located approximately 80 miles to the east of Fort Scott, there is evidence of occupation from the Dalton time on, where Dalton, Middle Archaic and Late Archaic sites are all represented in addition to Woodland (Roper 1977). Earlier occupations are also well documented at Rodgers Shelter somewhat farther to the east (Wood and McMillan 1976). Earlier Late Archaic occupations have been found buried in alluvium along the Osage River at the Cow-Killer site, just downstream from Melvern Lake and less than 100 miles northwest of Fort Scott (Reynolds 1982). The geomorphic investigations suggest that the surface of the T-1 terrace is not of great antiquity and, therefore,

it can be suggested that earlier occupations are buried in the T-1 terrace fill.

PLAINS WOODLAND CULTURAL RELATIONSHIPS AND SETTLEMENT PATTERNS

As discussed in the research design, one of the major objectives of the Fort Scott project was to investigate the cultural affiliation of Plains Woodland groups in the Fort Scott area and to provide a preliminary statement regarding Plains Woodland settlement patterns.

Cultural Affiliation

The best known Plains Woodland sites in the Fort Scott area are the three sites (24B03, 14B020 and 14B026) excavated by the University of Kansas in the late 1960's. The recent work by the Kansas State Historical Society at the Roth site, 14B0319, has produced a fourth well-documented early Pomona focus site. The investigations at these four sites along with the data discussed in the preceding chapter indicates the presence of a substantial Plains Woodland occupation along the Marmaton drainage. The earlier excavations resulted in the recovery of substantial collections of diagnostic artifacts such as ceramics and projectile points, although radiocarbon dates are lacking.

As previously noted, ceramics from 14B03 are predominantly sherd tempered with a smoothed surface finish, although one sand tempered cordmarked body sherd is also present. Projectile points include large dart points and small arrow points. Ceramics from 14B026 are similar, being predominantly sherd tempered and plain surfaced. Shell tempered plain surfaced sherds are present in small numbers at 14B026 as are several cordmarked sherd tempered sherds and one limestone tempered specimen. Projectile points include both large dart points and smaller Scallorn arrow points.

The ceramics from 14B020 are somewhat different from those recovered at 14B03 and 14B026. The collection is predominantly cordmarked sherd tempered, although simple stamped limestone tempered sherds and plain surfaced clay and limestone tempered sherds are also present. Projectile points again consist of a mixture of large dart points and smaller Scallorn points.

Five additional Plains Woodland sites were recognized in the Fort Scott project area as a result of the investigations during the 1960s. Included are 14B02, 14B016, 14B0202, 14B0203 and 14B0204. These have been principally identified on the basis of ceramics and dart or arrow points, although the sample of diagnostics from these sites is extremely small making assignment of cultural affiliation tenuous.

The Roth site (14B0319) is located on the T-1 terrace of the Marmaton River immediately to the northeast of the city of Fort Scott. The site was located within the right-of-way of construction for U.S. Highway 69 and excavated by the Kansas State Historical Society in 1981

(Brogan 1982). The site was approximately 8 ha in extent, although excavations were focused on one area which had intact cultural deposits. Features recovered from the site include a structure with interior pits and a rock hearth. Ceramics were identified by Brogan as Pomona Ware Cord-Impressed and Pomona Plain. The projectile point assemblage was predominantly composed of small arrow points (83 percent), although a number of large dart points (17 percent) were also present. Faunal remains from the site include a small number of freshwater mussel shells and a considerable amount of unworked animal bone. The fauna is predominantly white-tailed deer, although antelope, elk, bison, coyote and turtle are also present. Floral remains recovered from the site include wild grapes, pecan nuts, chenopods, Polygonum, Galium and several other species with low frequency of occurrence. Radiocarbon dates from the site are A.D. 720 ± 180 and A.D. 850 ± 90 .

Brogan interprets the site to be an early Pomona focus site, although these dates are considerably earlier than most sites attributed to the Plains Village or Middle Ceramic period. Presumably this identification was based on the identification of Pomona Ware at the site and absence of conical based Woodland vessels. However, the assemblage from the Roth site has much in common with the Woodland sites in the Fort Scott Lake area and has been included within the present discussion. Chronologically the site falls well within the temporal estimates for Plains Woodland sites in eastern Kansas.

Four more Plains Woodland sites were located during the present investigations in addition to the relocation of 14B0204. This brings the total number of known Plains Woodland sites present in the Fort Scott Lake area to 13. Three of the sites located during the present investigations produced a substantial number of diagnostic projectile points, although ceramics were recovered only from 14B0107. The projectile point assemblage from 14B0102 is dominated by dart points (91 percent) with one small triangular arrow point present. The dart points include various stemmed and notched forms. Seventy-two percent of the points from 14B0106 are dart points. Included are side-notched, contracting-stemmed and notched forms. The arrow points include Scallorn points and smaller triangular forms. The ceramics from 14B0107 include a grog or clay tempered rim section with a plain surface, two sand tempered cordmarked body sherds and one clay tempered smooth surfaced body sherd. The projectile points from 14B0107 are 95 percent dart points. Included are contracting-stemmed and expanding-stemmed forms. The contracting-stemmed forms are similar to the Langtry type. The two arrow points are small corner-notched forms similar to the Scallorn type.

Despite the number of Plains Woodland sites located, their cultural affiliation is far from clear. Archaeological work has yet to untangle the account of Plains Woodland occupations in eastern Kansas. A number of sites have been investigated (Calabrese 1969; Marshall 1972; Reynolds 1979a; Jones and Witty 1980). However, no comparative studies have been conducted and too few radiocarbon dates are available. The data that we have suggests the presence of several complexes in the eastern part of the state which have been referred to as the Greenwood phase, Grasshopper Falls phase and the Cuesta phase.

Of principal interest to the Fort Scott area is the newly proposed Greenwood phase (Jones and Witty 1980, Reynolds 1982) and the Cuesta phase (Marshall 1972). The Greenwood phase is principally known from the Curry site along the Verdigris River (Calabrese 1967) and the Cow-Killer site (Reynolds 1982). The Greenwood phase includes two principal ceramic types referred to as the Verdigris and Greenwood types. The Verdigris type predominantly is a conical based jar which is limestone tempered and has either a cordmarked or smoothed exterior surface finish. The Greenwood type is a clay tempered cordmarked globular vessel with a constricted neck and straight or flaring rim. The Greenwood type is comparable to Pomona ware and has been found on a number of Greenwood phase sites. Projectile points from Cow-Killer include large triangular dart points, Scallorn points and small triangular arrow points. The larger dart points include contracting-stemmed and corner-notched expanding-stemmed forms. Projectile points from the Curry site include a greater percentage of Scallorn and other small arrow points. Notched and stemmed dart points are also present. A radiocarbon date of A.D. 380 ± 230 was obtained from the Curry site. Reynolds (1982) suggests a date of A.D. 500-1000 for the Greenwood phase component at the Cow-Killer site.

The Cuesta phase components have been recognized along the Elk River and Big Hill Creek in southeast Kansas. Diagnostic traits of this phase include large, oval to circular postmold patterns with widely spaced posts. Interior house features include pits and hearths. The principal Cuesta phase site investigated by Marshall (1972) in the Elk City Lake area was the Infinity site. At least five large habitational structures were present indicating the presence of a nucleated village. Features from the site include a midden, dog and human burials and pits. Ceramics from the Cuesta phase include clay tempered plain surfaced vessels. Some are decorated with dentate stamping punctates and stick impressions. Projectile points include a combination of large dart points and smaller arrow points. The Langtry type is predominate among the dart points. Radiocarbon dates from the Cuesta phase component at the Infinity site are A.D. 780 ± 80 and A.D. 970 ± 80 .

The Woodland period in the western prairie region of Missouri is not well known either (Chapman 1980:80). Two of the better known sites in the Stockton Lake area just east of Fort Scott are the Flycatcher and Dryocopus sites. Three structures represented by oval or semicircular postmold patterns were excavated at the Flycatcher site, although the investigators estimated that as many as three more may have been present (Pangborn, Ward and Wood 1971). Pits and hearths were located between the houses. Ceramics were not present at the site and the projectile point assemblage consists of a homogenous collection of Gary dart points. Two dates of A.D. 715 ± 95 and A.D. 1390 ± 100 were obtained from the site, although the investigators suggest a date of ca. A.D. 1000 for the site.

The Dryocopus site contained four structures similar to those found at Flycatcher with features and hearths located between houses (Calabrese et al. 1969). A similar late date of A.D. 1485 ± 100 was obtained from the site. The projectile points consist of dart points including corner-notched expanding forms and straight based

contracting-stemmed Langtry points. Despite the differences in point assemblages, Calabrese et al. (1969) suggest that Dryocopus and Flycatcher are roughly contemporaneous and relate to a single cultural complex.

Roper (1977) indicates that evidence for Late Woodland occupation in the Stockton and Truman Lake areas is substantial. She bases this on the presence of limestone and clay-tempered ceramics and a series of projectile points such as Langtry, Gary, Rice Side Notched, Scallorn and other small types. She divides the Woodland sites into two groups which she suggests are temporally sequential. The first yields points of the Langtry, Gary and side-notched types; the second yields smaller Scallorn and triangular arrow points. Of the 15 sites investigated in the Stockton study, only one site had specimens from both groups.

The Woodland sites in the Fort Scott area exhibit some characteristics of the Woodland sites assigned to the Cuesta and Greenwood phase including the presence of limestone and clay tempered ceramics with smoothed and cordmarked surface finishes. There are additional similarities such as the presence of both dart points and arrow points on the same site. The Fort Scott sites also exhibit similarities to the sites in the Stockton area such as the presence of a small number of ceramics, a large number of contracting-stemmed points and the presence of sites which appear to represent villages.

The differences in ceramics and projectile points noted in the Fort Scott Plains Woodland sites probably indicates that there are some variations in the Plains Woodland sites in the sample. This may have resulted from adaptational or stylistic changes through time, or the movement of more than one Plains Woodland cultural group into the Fort Scott area. In the absence of more extensive ceramic collections, and with the lack of radiocarbon dates providing firm chronological control, it appears premature to classify the Plains Woodland sites in the Fort Scott area into a more refined taxonomic unit at the present.

The comparative data discussed above indicates that these sites probably date to the last half of the first millennium A.D. (500-1000 A.D.). Further excavation and analysis may indicate that these sites have close relationships with the Pomona focus sites which are generally classified within the Plains Village Tradition. As a matter of fact, one of the noteworthy features of the Fort Scott survey is the absence of sites falling into the later Plains Village period. It is likely that the Plains Woodland Tradition persisted to a late date in the Fort Scott area and was probably contemporary with Plains Village Tradition cultures to the west.

Settlement Patterns

At the present time, no generalized Plains Woodland settlement pattern has been suggested for eastern Kansas. As was noted in Chapter V, settlement pattern models have been proposed for particular localized Plains Woodland populations. Reynolds (1979a) has characterized a Grasshopper Falls phase settlement pattern in northeastern Kansas as consisting of small isolated clusters of nuclear households or

individual nuclear households occupying terraces adjacent to secondary drainages. He suggests that the structures or houses present indicate a sedentary lifestyle for at least part of the year, although no evidence of horticulture was recovered. Henry (1978) has suggested a settlement pattern for Plains Woodland populations to the southwest of Fort Scott in the Hominy Creek valley. He characterizes this pattern as consisting of a central-based circulating pattern with small social groups present during summer-autumn and large group aggregation during other seasons.

Both of these localized settlement patterns fall either explicitly (Henry 1978), or implicitly (Reynolds 1979a), within the more general community patterning model proposed by Beardsley et al. (1956). This model is termed as a central-band wandering pattern with the community or band spending part of each year wandering and the rest at a semipermanent settlement or central base (Beardsley et al. 1956).

The locational and artifactual data recovered from the Plains Woodland sites in the Fort Scott project area allows the initial formulation of a settlement pattern specific to this locale. The data indicates that Plains Woodland sites are located close to the primary waterways such as the Marmaton, or its large tributaries such as Paint Creek and Pawnee Creek (Figure 5). No sites are located on the smaller tributaries or in the interfluvial upland divides. Four sites are located along Paint Creek and eight along the Marmaton River, including 14B026 and the Roth site, which are located east of the Fort Scott Lake project. All of the sites are located on the T-1 terraces with the exception of 14B016, which is located on a slope overlooking the Marmaton River, and 14B0102, which is located on an upland bluff overlooking the Marmaton.

The location of several sites along the Marmaton River seems to indicate a pattern different from that suggested by Reynolds (1979a) for Grasshopper Falls phase occupations. He suggested that the households occupied terraces adjacent to secondary drainages. The pattern at Fort Scott, however, seems to be one where the more intensive, and perhaps semipermanent, occupations have occurred on level terraces of the primary drainage, i.e., the Marmaton River, while the less intensive occupations are located along the secondary drainages. Given the small number of sites located in the Fort Scott area, it is difficult to ascertain whether this difference is a result of a differing settlement pattern or a sampling bias.

Earlier reports of investigations in the area (Bradley 1969, Bradley and Harder 1974) do not provide much information regarding the size of the Plains Woodland sites studied. However, based on the Roth site and the four sites located during the 1982 survey, there appear to be two types of habitational sites represented. The first consists of large sites, such as the Roth site, 14B0106 and 14B0107, which are located on level terraces along the Marmaton River. These sites show evidence of midden development and probably contain a number of structures. The second type consists of smaller sites, such as 14B0102, 14B0103 and 14B0204. These sites are located on higher and better drained terrain along the Marmaton River and along Paint Creek.

Evidence of burnt rock middens may be present on both large and small sites.

The larger sites, such as 14B0106, 14B0107 and the Roth site, likely represent small hamlets or villages and are probably similar to the village sites excavated in the Stockton Lake area or Component B at the Infinity site. The evidence of both floral and faunal resource utilization indicates not only the intensity of the occupations, but also the relatively wide range of resource zones exploited by the Plains Woodland inhabitants. The presence of mussel shells at two of these three sites reflects utilization of the riverine resources. At Roth, the occurrence of prairie adapted faunal species suggests that the occupants were venturing into the uplands for at least part of their food supply. In general, it appears that the Plains Woodland inhabitants were situating themselves at a central location with some degree of permanence. From this centrally located base camp or habitation, they were able to exploit at least three different resource zones.

The smaller sites located in the Fort Scott project area are probably habitational sites also, although occupied by smaller groups and for shorter periods of time. These sites contain less diverse tool assemblages and no evidence of structures. The activities which occurred at these sites seem to focus on a much narrower range of resource zones, primarily the riverine and uplands, with little or no evidence of floral resource exploitation.

The settlement pattern which emerges from this data is similar to the central based wandering pattern model initially put forth by Beardsley et al. (1956). The central hub or semipermanent base camps would be represented by 14B0106, 14B0107 and Roth in this central-based wandering model. The smaller and more specialized sites would represent the "spokes" or wandering portion of this model. Seasonally available resources could then be exploited from either of these types of sites.

PREDICTING SITE LOCATIONS

One of the primary objectives of the geomorphological investigation at the Fort Scott Lake project was to provide information that could be used to formulate a predictive model of cultural resources present in the proposed project area. Although it is impossible to determine the numbers and locations of all sites in the project area, some estimates are possible based on the survey information. The archaeological data from the survey were correlated with the geomorphic data to determine the potential for finding archaeological sites on different terrain types in the area (Table 20).

The total of 1837 acres surveyed resulted in the location of 14 sites including ten on the T-1 terrace and four on the upland. No sites were located on the T-0 terrace. These data indicate that a disproportionate number of sites are located on the T-1 terrace landform. For example, a total of .02083 sites were located per acre on

Table 20. Acreage surveyed, number of sites located and predicted number of sites by terrain type per section.

	ACRES SURVEYED	SITES LOCATED	SITES PER ACRE	PREDICTED NO. SITES PER 640 ACRES
T-0	300	0	0	
T-1	480	10	.02083	13.33
Upland/Slope	1057	4	.00378	2.41
TOTAL	1837	14	.00762	4.88

the T-1 terrace while only .00378 per acre were located on the uplands. Based on these results, a total of 13.33 sites would be expected for each section (640 acres) of T-1 terrace terrain and only 2.41 sites per section for upland terrain. The ratio of terrace sites to upland sites is about 5.5 to 1.

The geomorphological data also provides considerable information regarding the location and distribution of older cultural deposits. At least two distinct terrace levels were identified in the project area. The first or oldest terrace, designated as T-1, is as yet undated. However, diagnostic artifacts suggest that the T-1 terraces are at least 1000 years old. The lowest terraces or floodplains (T-0) are more recent and are the most active geomorphologically.

Most of the prehistoric sites in the survey area are associated with T-1 terraces. Plains Woodland sites are common on the surface of the T-1 deposits, and older Archaic sites were discovered as deep as 1.5 m below the terrace surface. The buried sites occur in two different soil settings. A buried cultural strata was found within the B horizon of the T-1 surface soil at site 14B0107. This setting suggests that the previous land surface represented by the cultural strata was not exposed for a long enough period to be modified by soil-forming processes which operated at the time. In contrast, a thick cultural midden was found in a deeply buried A horizon at site 14B0108. The presence of a buried paleosol is important to the present study because it represents a period of environmental stability conducive to the preservation of archaeological sites. Thus, it is likely that other subsurface sites exist where localized deposition has buried the paleosol on the T-1 terraces.

Based on the archaeological and soil-geomorphic evidence from the survey area, there is great potential for finding surface and buried

sites on T-1 terraces throughout the project area. The buried sites may or may not be associated with buried paleosols. On the latest terraces, the T-0 floodplain, prehistoric sites appear to be nonexistent, although it would be logical to find some proto-historic materials in these landforms. Floodplains are active geomorphic surfaces formed by the meandering and incision of streams. Active floodplains will be covered by high water at different recurrence intervals -- some each year, some only once in a hundred years. Regardless of the recurrence interval, the result of stream activity is the same. It is unlikely that archaeological sites will be preserved long in floodplain environments. Thus, there is low potential for finding sites in situ on or within T-0 sediments.

RECOMMENDATIONS

Archaeological survey and testing of the 14 sites located at Fort Scott Lake was undertaken to evaluate the potential of the sites for inclusion in the National Register of Historic Places. The criteria which determine whether a property is eligible for the National Register are set forth in 36 CFR 60.6:

National Register criteria for evaluation. The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association and

(a) That area associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history.

These criteria set forth in a precise manner the substance of what is termed "legal significance" (Schiffer and Gumerman 1977:245). To state the situation concisely, if a property is adjudged to meet one or more of the above criteria, then it is eligible for inclusion in the National Register (i.e., it is a significant property) and, therefore, falls under the provenience of Federal cultural resource protection statutes. However, a determination of "significance" cannot be as simply and summarily assessed as the Federal Regulations seem to imply.

Because the Federal statutes which govern most cultural resource management projects revolve around determinations of significance and National Register eligibility, a substantial amount of literature has developed that explores these concepts (Dixon 1977; Glassow 1977; McGimsey 1979; Raab and Klinger 1977 and 1979; Schiffer and House 1977a and 1977b; Scoville et al. 1972; Sharrock and Grayson 1979; and Wendorf 1978). What is "significant" varies from area to area and through time as research interests change. Promulgation of state and regional research designs, which are authorized by the National Historic Preservation Act of 1966, will provide a groundwork for determinations of significance but this is not a complete solution. Archaeologists have to make the necessary determinations on the basis of what is already known, possible future developments, existing research designs and comparisons, and with the best overall professional judgement.

Determinations of eligibility for archaeological resources are generally made using Criterion D. The most widely accepted and commonly employed means of making determinations under this criterion, is to assess a site's potential to contribute new or substantial data towards the resolution of one or more research questions. Which research questions are important for making determinations of significance are occasionally enumerated by professional organizations or by the state or federal agency charged with responsibility for cultural resources. More common, however, is that the individual researcher will set forth a series of research topics in the project's research design. These topics will reflect the investigator's understanding of the current state of knowledge in the project area's region. For the Fort Scott sites, recommendations of eligibility were made through recourse to assessment of each site's integrity and the probability of its contributing towards clarification of the cultural sequence in southeast Kansas and the elucidation of settlement and subsistence patterns.

In making recommendations for the sites encountered during the Fort Scott Lake project survey, four basic criteria were utilized. These are: (1) physical condition of the site, (2) the site content, (3) its relationship to regional research questions and (4) the expected impact on the site. The first three were used to evaluate the potential of the site in answering questions pertinent to the archaeology of the region and the fourth was used in the process of making recommendations for mitigation if required.

Site condition is based on the amount and nature of post-depositional disturbance. Factors such as plowing, construction activities, road building and natural erosion were taken into account. The site content is based on the archaeological features or remains which have been recorded or which can be expected to be present given the erosional and depositional conditions at the site. Included in the site content are such things as the presence or absence of a surface distribution, preservation of subsurface cultural deposits or features and the likelihood of recovering datable carbon, faunal or botanical remains or diagnostic artifacts. These factors and others were examined to determine which materials a future researcher might have to work with in further evaluation of the site. The knowledge that can be gained about a particular site was examined in relation to the present

knowledge about the region, specifically with regard to its potential for improving the data base regarding past human events in the area.

These three major factors taken together were used in making a judgement as to the relative significance of a particular site. In the case of a site judged not significant no further work is recommended. This does not mean the site is of no interest as an archaeological manifestation, but rather that further work would be unlikely to increase the data base already collected in survey and testing. Destruction of these sites will, therefore, not seriously affect the data base for the region.

In the case of a site that is judged to be significant as a result of the survey and testing, there are then a limited number of options for mitigation. The preferred option is preservation and in cases where this appears feasible it will be recommended. The other option, in cases where planned activities will destroy or seriously endanger the site, is data recovery or excavation. The form this excavation will take is dependent on the nature of the site and the research questions to be addressed. It could range from a controlled surface collection to a major block excavation.

Data for the 14 sites located, such as their cultural affiliation, the inferred activity that took place at these sites, significance in relation to regional research problems and National Register recommendations are presented in Table 21. Sufficient data was recovered from 12 of the 14 sites investigated during the present project to permit a recommendation for National Register eligibility. As discussed previously, a property owner did not permit testing on two sites, 14B0116 and 14B0204. Should plans for construction of Fort Scott Lake proceed, testing should be conducted at these two sites to determine their eligibility.

Six of the remaining 12 sites are recommended for Nomination to the National Register of Historic Places. These include the four known Plains Woodland sites (14B0102, 14B0103, 14B0106, 14B0107) and two sites which have substantial subsurface middens (14B0104, 14B0108). The cultural affiliation of the latter two is not known, but could be determined by radiocarbon dating. The Woodland sites recommended for eligibility include two of the larger sites interpreted to be villages and two smaller sites which probably represent base camps. Additionally, significant Late Archaic deposits are present at 14B0107 and significant Historic Aboriginal data may be present at 14B0103.

The six sites considered to be non-eligible (14B0101, 14B0105, 14B0110, 14B0111, 14B0113 and 14B0114) are generally sites which have been disturbed. Three of these appear to be the remains of Historic American foundations. 14B0111 apparently dates to the Late Archaic period which would indicate some degree of importance. However, there is no evidence of intact subsurface deposits at the site. It is likely that better preserved Archaic sites can be located elsewhere in the project.

Table 21. Cultural affiliation, inferred site function, significance and National Register recommendations for sites located in the Fort Scott survey.

SITE NUMBER	CULTURAL AFFILIATION	INFERRRED ACTIVITY	SIGNIFICANCE IN RELATION TO REGIONAL RESEARCH PROBLEMS	NATIONAL REGISTER RECOMMENDATION	ELIGIBLE	NOT ELIGIBLE
14BO101	Historic Unknown Prehistoric	Residential Limited Use	Historic structure is destroyed. Prehistoric component is deflated		+	
14BO102	Plains Woodland	Base Camp	Woodland settlement-subsistence patterns, use of burnt rock midden		+	
14BO103	Plains Woodland Historic Aboriginal	Base Camp	Considerable. Well preserved midden. Presence of Historic Aboriginal component.		+	
14BO104	Unknown	Base Camp	Prehistoric settlement-subsistence pattern, preserved buried midden.		+	
14BO105	Unknown	Limited Use	Site is probably deflated and disturbed.		+	
14BO106	Plains Woodland Historic	Village Residential	Considerable. Plains Woodland settlement-subsistence pattern, community structure.		+	
14BO107	Late Archaic Plains Woodland	Base Camp Village	Late Archaic and Plains Woodland settlement-subsistence patterns.		+	
14BO108	Unknown	Limited Use	Located in depressional fill. Presence of feature.		+	
14BO110	Historic	Residential	Historic structure is destroyed.		+	
14BO111	Archaic	Limited Use	Site is deflated.		+	
14BO113	Historic	Limited Use	May be Historic period dump.		+	
14BO114	Unknown Prehistoric	Limited Use	Lack of subsurface deposits.		+	
14BO116	Unknown	Probable Cemetery	Unknown. Site should be tested.			
14BO204	Plains Woodland	Limited Use	Unknown. Site should be tested.			

All six of the sites recommended for nomination to the National Register will be located in either the multipurpose pool or the flood control pool of the proposed Fort Scott Lake. Sites 14B0107, 14B0102, 14B0103, 14B0104 and 14B0108 are located within the multipurpose pool. Site 14B0106, located near the western end of the lake, will be within the multipurpose pool. The construction and operation of the proposed Fort Scott Lake will result in the destruction of these sites either by inundation or by shoreline erosion. Therefore, preservation does not appear to be a viable form of mitigation. Should the U.S. Army Corps of Engineers proceed with its construction plans at Fort Scott Lake, archaeological data recovery investigation appears to be the best alternative form of mitigation.

In conjunction with the data recovery investigation at the six sites mentioned above, we recommend that the U.S. Army Corps of Engineers take the following steps into consideration in its planning process.

1. Intensive inventory and evaluation of the remaining 90 percent of the project lands. This is required by a number of public laws including the National Environmental Policy Act of 1969 (PL 91-190), the National Historic Preservation Act of 1966 (PL 89-665), Executive Order 11593.
2. Systematic backhoe trenching of T-1 terrace deposits in the project area with the objective of locating buried Archaic sites. Geomorphological work conducted during the present study indicates that sediments in the T-1 terrace fill date to the Archaic period.
3. Steps should be taken to conduct additional geomorphological work in the area. This should include several cross valley subsurface transects. Samples for radiocarbon dating and pollen analysis should be collected. This will refine the present alluvial chronology of the Marmaton Valley and provide information on past environments in the area.
4. Comprehensive radiocarbon and thermoluminescence dating of existing collections should be conducted. As we have discussed, the chronology and cultural affiliation of many of the Plains Woodland sites and sites with unknown cultural affiliation hampers reconstruction of a cultural chronology for the area. Such a chronology can be established through such a dating program. Such control will be cost effective in the long run, since it will avoid sampling redundancies and reduce the amount of data recovery investigation required.

Evidence is presently available indicating that the proposed Fort Scott Lake project area contains a large number of archaeological sites, many of which contain well preserved features and organic remains. Furthermore, many of these sites appear to be of considerable importance to regional research questions such as Plains Woodland chronology and settlement-subsistence patterns and the development of Plains Village Tradition complexes such as the Pomona focus. If plans to proceed with

the construction of Fort Scott are finalized, it is important to implement cultural resource preservation planning at an early stage in the project to insure that these resources are adequately inventoried, evaluated and studied.

REFERENCES

Aldenderfer, M.S. and K.D. Bezsytko
1981 Prediction under constraint: the Wayne County project.
Contract Abstracts and CRM Archaeology 1(3):21-24.

Artz, J.A.
1980 Soil stratigraphy and late Holocene environments of the Upper Walnut River basin, Kansas Flint Hills. Abstracts, Thirty-Eighth Plains Conference, Iowa City, Iowa.

Baird, L., S.L. Skinner, K. Fimple, K. Morgan, A. Pitchford and A.B. Amerson
1982 Historical and architectural field survey of a portion of Fort Scott Lake project, Bourbon County, Kansas. Draft report prepared for U.S. Army Corps of Engineers, Kansas City District by Environment Consultants, Inc.

Baker, V.R. and M.M. Penteado
1977 Adjustment to Quaternary climate change by the Colorado River in central Texas. Journal of Geology 88:395-422.

Bell, E.L. and J.R. Fortner
1981 Soil survey of Bourbon County, Kansas. USDA Soil Conservation Service.

Beardsley, R. K. et al.
1956 Functional and evolutionary implications of community patterning. In Seminars in archaeology: 1955, edited by R. Wanchope, American Antiquity Memoir 22 (2, Part 2): 129-157.

Berry, B., C. Chapman and J. Mack
1944 Archaeological remains of the Osage. American Antiquity 10(1):1-11.

Bilki, A.F. and E.J. Ciolkosz
1977 Time as a factor in the genesis of four soils developed in recent alluvium in Pennsylvania. Soil Science Society of America, Proceedings 41:122-127.

Blakeslee, D.J. and A.H. Rohn
1982 Man and environment in northeastern Kansas: the Hillsdale Lake project. Draft report prepared for the U.S. Army Corps of Engineers, Kansas City District by the Department of Anthropology, Wichita State University.

Borchert, J.R.
1950 The climate of the central North American grassland.
Association of American Geographers, Annals 60:1-39.

Bradley, L.E.
1969 Archaeological investigations in the Fort Scott Reservoir, Bourbon County, Kansas 1967: a preliminary report. Report submitted to the National Park Service.

Bradley, L.E. and D. Harder
1974 Archaeological excavation in the Fort Scott Reservoir area, southeastern Kansas. Report submitted to the National Park Service.

Brogan, W.T.
1981 The Cuesta phase: a settlement pattern study. Kansas State Historical Society Anthropological Series No. 9.

1982 The Roth site: an early Pomona focus manifestation in eastern Kansas. Kansas State Historical Society Contract Archaeology Publication No. 1.

Brown, L.A.
1964 An appraisal of the archaeological and paleontological resources of six reservoir areas in Kansas and Nebraska. MS, Missouri Basin Project, Smithsonian Institution.

Bryson, R.A.
1966 Air masses, streamlines and the boreal forest. Geographical Bulletin 8:228-269.

Calabrese, F.A.
1967 The archaeology of the upper Verdigris watershed. Kansas State Historical Society Anthropological Series No. 3.

Calabrese, F.A., R.E. Pangborn and R.J. Young
1969 Two village sites in southwestern Missouri: a lithic analysis. Missouri Archaeological Society Research Series No. 7.

Caldwell, W.W. and D.R. Henning
1978 North American Plains. In Chronologies in new world archaeology, edited by R.E. Taylor and C.W. Meighan, pp. 113-145. Academic Press, New York.

Center For Public Affairs
1980 Kansas statistical abstract, 1980. University of Kansas, Lawrence.

Champe, J.L.
1946 Ash Hollow Cave. University of Nebraska Studies, New Series No. 1.

Chapman, C.H.
1975 The archaeology of Missouri, I. University of Missouri Press, Columbia, Missouri.

Chapman, C.H.
1980 The archaeology of Missouri II. University of Missouri Press. Columbia.

Davis, A.M.
1977 The prairie-deciduous forest ecotone in the upper Middle West. Association of American Geographers, Annals 67:204-213.

Dixon, K.A.
1977 Applications of archaeological resources: broadening the basis of significance. In Conservation archaeology, edited by M.B. Schiffer and G.J. Gumerman, pp. 277-92. Academic Press, New York.

Feagins, J.D.
1973a Afton points in eastern Kansas. Kansas Anthropological Association Newsletter 18(6):1-3.
1973b Letter to Thomas Witty, State Archaeologist, Kansas Anthropological Association Newsletter 18(7):8.
1973c Two late prehistoric sites in southeastern Kansas. M.S., Department of Anthropology, University of Oklahoma.
1975 A most preliminary sketch of prehistoric site destruction in the Little Osage River valley, Bourbon County, Kansas. Kansas Anthropological Association Newsletter 21(4):1-6.
1978 Archaeological site 14B01477: a tale of woe that can be repeated many times. Kansas Anthropological Association Newsletter 23(8):1-7.
1979 An archaeological survey of the proposed sewage facilities for the City of Fulton, Bourbon County, Kansas. Kansas City Museum of History and Science, Cultural Resource Investigation No. 11.

Frison, G.C.
1978 Prehistoric hunters of the High Plains. Academic Press: New York.

Frye, J.C.
1961 Fluvial deposition in the glacial cycle. Journal of Geology 69:600-603.

Frye, J.C. and A.B. Leonard
1952 Pleistocene geology of Kansas. Kansas Geological Survey Bulletin 99.

Glassow, M.
1977 Prehistoric hunters of the High Plains. Academic Press: New York.

Grosser, R.

1973 A tentative cultural sequence for the Snyder site, Kansas. Plains Anthropologist 18(61):228-238.

1977 Late Archaic subsistence patterns from the central Great Plains: a systematic model. Ph.D. dissertation, University of Kansas, Lawrence.

Hall, S.A.

1977 Geological and paleoenvironmental studies. In The prehistory and paleoenvironment of Birch Creek valley, edited by D.O. Henry, pp. 11-31. University of Tulsa, Tulsa.

Haynes, C.V.

1976 Late Quaternary geology of the lower Pomme de Terre valley. In Prehistoric man and his environments: a case study in the Ozark Highlands, edited by W.R. Wood and R.B. McMillan, pp. 47-63. Academic Press, New York.

Henry, D.O.

1978 The prehistory and paleoenvironment of Hominy Creek valley: 1977 field season. University of Tulsa, Contributions in Archaeology 4.

1980 Summary of the investigations. In The prehistory and paleoenvironment of Hominy Creek valley: 1978 field season, assembled by D.O. Henry, pp. 55-61. University of Tulsa, Tulsa.

Hershey, O.H.

1896 Ancient river deposits of the Spring River valley in Kansas. American Game 17:37-40.

Hoyer, B.E.

1980 The geology of the Cherokee Sewer site. In, The Cherokee excavations: Holocene ecology and human adaptations in Northwestern Iowa, edited by D.C. Anderson and H.A. Semken, Jr., pp. 21-66. Academic Press, New York.

Jamkhindikar, S.

1967 Sedimentary characteristics of Pleistocene deposits, southeastern Kansas. Kansas Geological Survey Bulletin 187(5).

Jewett, J.M.

1945 Stratigraphy of the Marmaton group in Kansas. Kansas Geological Survey Bulletin 58.

Jewett, J.M., P.A. Emery and D.A. Hatcher

1965 The Pleasanton group (Upper Pennsylvanian) in Kansas. Kansas Geological Survey Bulletin 175(4).

Johnson, A.E.

In Plains Woodland. In forthcoming Handbook of North American Indians.

Johnson, A.E. and W.R. Wood
1980 Prehistoric studies on the Plains. In Anthropology on the Great Plains, edited by W.R. Wood and Margot Liberty. University of Nebraska Press, Lincoln.

Johnson, D.L., D. Watson-Stegner and P.R. Wilcock
1981 Aspects of the soil geomorphology of the lower Pomme de Terre River valley, Missouri, and surrounding region. In Vol. III, Prehistoric cultural continuity in the Missouri Ozarks: the Truman Reservoir mitigation project, edited by D.R. Roper, pp. 591-667. Draft submitted to the U.S. Army Corps of Engineers, Kansas City District.

Jones, B.A. and T.A. Witty, Jr.
1980 The Gilligan site. In Salvage archaeology of the John Redmond Lake, Kansas, edited by T.A. Witty, Jr. pp. 67-125. Kansas State Historical Society Anthropological Series No. 8.

Kansas State Historical Society
1974 Report of Phase II investigations of Project (BO) 69-6 F 083-1(24) Bourbon County. Report submitted to the U.S. Department of Transportation.

Katz, P.R.
1971 Report: Radiocarbon dates from the Sutter site, northeastern Kansas. Plains Anthropologist 18(60):167-168.

Krieger, A.D.
1964 Early man in the New World. In Prehistoric man in the New World, edited by J.D. Jennings and E. Norbeck, pp. 23-81. Chicago.

Lees, W.B., R.D. Mandel and K.A. Parker
1982 National register testing at 23BE1007, 23BE1008 and 23BE1010 downstream from the Harry S. Truman Dam and Reservoir, Benton County, Missouri. Report submitted to the U.S. Army Corps of Engineers, Kansas City District.

Mandel, R.D.
1980 Climatic and vegetative change inferred from alluvial paleosols in central and south-central Texas, unpublished M.A. thesis, Department of Geography-Meteorology, University of Kansas, Lawrence.

Marshall, J.O.
1972 The archaeology of the Elk City Reservoir: a local sequence in southeastern Kansas. Kansas State Historical Society Anthropological Series No. 6.

McComb, A.L. and W.E. Loomis
1944 Subclimax prairie. Bulletin of the Torrey Botanical Club 71:46-97.

McGimsey, C.R. III
1979 The once and future data. American Antiquity 44(3):583-9.
Washington, D.C.

Montet-White, A.
1963 Analytical description of the chipped stone industry from the
Snyder site, Calhoun County, Illinois. In Miscellaneous
studies in typology and classification. University of
Michigan, Museum of Anthropology, Anthropological Papers 35.
Ann Arbor.

Moore, P.S. and W.H. Birkby
1964 Archaeological investigations in Melvern Reservoir, Osage
County, Kansas, 1962. Report submitted to the National Park
Service.

Morrison, R.B.
1967 Principles of Quaternary soil stratigraphy. In, Proceedings
of the 7th INQUA Congress, edited by R.B. Morrison and H.E.
Wright, Jr., pp. 1-69.

1968 Means of time-stratigraphic division and long distance
correlation of Quaternary successions. In, Means of
correlation of Quaternary Successions, edited by R.B. Morrison
and H.E. Wright, Jr., pp. 1-113. University of Utah Press,
Salt Lake City.

Pangborn, R.E., H.T. Ward and W.R. Wood
1971 Flycatcher village: a non-pottery site in the Stockton
Reservoir, Missouri. Plains Anthropologist 16(51):60-73.

Parizek, E.J.
1965 Stratigraphy of the Kansas City group. In The geology of the
Kansas City group at Kansas City. Geologic Society of America
annual meeting, 1965, Field Trip Guidebook.

Parsons, R.B., C.A. Balster and A.O. Ness
1970 Soil development and geomorphic surfaces, Willamette Valley,
Oregon. Soil Science Society of America, Proceedings
34:485-491.

Parsons, R.B., W.H. Scholtes and F.F. Riecken
1962 Soils of Indian mounds in northeastern Iowa as benchmarks for
studies of soil genesis. Soil Science Society of America, Proceedings
26:491-496.

Prill, R.C. and F.F. Rieken
1958 Variations in forest-derived soils formed from Kansas till in
southeastern Iowa. Soil Science Society of America
Proceedings 22:70-75.

Raab, L.M. and T.S. Klinger
1977 A critical appraisal of "significance": in contract
archaeology. American Antiquity 42(4):629-634.

1979 A reply to Sharrock and Grayson on archaeological significance. American Antiquity 44(2):328-329. Washington, D.C.

Reeder, R.L.

1980 The Sohn site: a lowland Nebo Hill complex campsite. In Archaic prehistory on the prairie-plains border, edited by A.E. Johnson, pp. 55-66. University of Kansas Publications in Anthropology No. 12.

Reid, K.S.

1980 Nebo Hill, Archaic political economy in the riverine Midwest. Ph.D. dissertation, Department of Anthropology, University of Kansas, Lawrence.

Reps, J.W.

1969 Town planning frontier America. Princeton University Press, Princeton, N.J.

Reynolds, J.D.

1979a The Grasshopper Falls phase of the Plains Woodland. Kansas State Historical Society Anthropological Papers 7. Topeka.

1979b Phase II archaeological survey of Highway Project 31-6-RS-1321(2) Bourbon County, Kansas. Report submitted to the Kansas Department of Transportation.

1982 Archaeological investigations at the Cow-Killer site, 140S347. Report submitted to the Department of the Army, Kansas City District Corps of Engineers.

Robley, T.F.

1894 Radiocarbon dates on the Twelve-Mile Creek site, a Paleo-Indian kill site in western Kansas. Abstract, Thirty-Seventh Plains Anthropologist Conference, Kansas City, Missouri; National Park Service, Lincoln, Nebraska.

Rodgers, R. and L. Martin

1979 Radiocarbon dates on the Twelve Mile Creek site, a Paleo-Indian kill site in western Kansas. Abstract, Thirty-Seventh Plains Anthropologist Conference, Kansas City, Missouri. National Park Service, Lincoln, Nebraska.

Roper, D.C.

1977 The downstream Stockton study: the cultural resources survey. Report submitted to the Department of the Army, Kansas City District Corps of Engineers.

Ruhe, R.V.

1965 Quaternary paleopedology. In The Quaternary of the United States, edited by H.E. Wright, Jr. and D.G. Frey. Princeton University Press, Princeton, New Jersey.

Ruhe, R.V.
1969 Quaternary landscapes in Iowa. Iowa State University Press, Ames.

Ruhe, R.V. and R.B. Daniels
1958 Soils, paleosols, and soil-horizon nomenclature. Soil Science Society of America Proceedings 22:66-69.

Ruhe, R.V., R.B. Daniels and J.G. Cady
1967 Landscape evolution and soil formation in southwestern Iowa. U.S. Department of Agriculture Technical Bulletin 1349.

Schiffer, M.B. and G.J. Gumerman
1977 Conservation archaeology: a guide for the cultural manager. Academic Press.

Schiffer, M.B. and J.H. House
1977a Cultural resource management and archaeological research: the Cache project. Current Anthropology 18(1):43-68.

1977b An approach to assessing scientific significance. In Conservation Archaeology, edited by M.B. Schiffer and G.J. Gumerman, pp. 249-256. Academic Press, New York.

Schmits, L.J.
1978 The Coffey site: environment and cultural adaptation at a prairie-plains Archaic site. Midcontinental Journal of Archaeology 3(1):69-185.

1980a Holocene fluvial history and depositional environments at the Coffey site, Kansas. In Archaic prehistory on the prairie-plains border, edited by A.E. Johnson, pp. 79-106. University of Kansas Publications in Anthropology 12.

1980b The Williamson site. In Salvage archaeology of the John Redmond Lake, Kansas, edited by T.A. Witty, pp. 13-66. Kansas State Historical Society Anthropological Series Number 8.

1980c Report of excavations at the Salb site, 14CF331. In Salvage archaeology of the John Redmond Lake, Kansas, edited by T.A. Witty, Jr. pp. 126-132. Kansas State Historical Society Anthropological Series No. 8. Topeka.

1981 Archaeological and geological investigations at the Coffey site, Tuttle Creek Lake, Kansas. Report submitted to Interagency Archaeological Services Branch Rocky Mountain Region. National Park Service, Denver.

1982 The May Brook site. The Missouri Archaeologist 43:1-66.

Schmits, L.J., K.C. Reid and Nancy O'Malley
1980 Dead Hickory Tree: a Plains Village occupation in east-central Kansas. Missouri Archaeologist 41:1-56.

Schmits, L.J., C.A. Wright and M.J. Adair
1982 Cultural adaptation in the Little Blue River valley. In Little Blue prehistory: archaeological investigations at Blue Springs and Longview Lakes, Jackson County, Missouri, edited by L.J. Schmits, pp. 589-637. Report submitted to the U.S. Army Corps of Engineers, Kansas City District.

Schumm, S.A.
1965 Quaternary paleohydrology. In Quaternary of the United States, edited by H.E. Wright, Jr. and D.G. Frey, pp. 783-794. Princeton University Press, Princeton, New Jersey.

Scoville, D.H., G.J. Gordon, and K.M. Anderson
1972 Guidelines for the preparation of statement of environmental impact on archaeological resources. U.S. Park Service, Arizona Archaeological Center.

Sharrock, F.W. and D.K. Grayson
1979 "Significance" in contract archaeology. American Antiquity 44(2):327-328. Washington, D.C.

Soil Survey Staff
1951 Soil survey manual. U.S. Department of Agriculture Handbook 18. U.S. Government Printing Office, Washington, D.C.

Sorenson, C.J.
1977 Reconstructed Holocene bioclimates. Association of American Geographers, Annals 67:214-222.

Sorenson, C.J., R.D. Mandel and J.C. Wallis
1976 Changes in bioclimate inferred from paleosols and paleohydrologic evidence in east-central Texas. Journal of Biogeography 3:141-149.

Thornthwaite, C.W.
1948 An approach toward a rational classification of climate. Geographical Review 38:55-94.

Thorp, J.
1949 Interrelations of Pleistocene geology and soil science. Geological Society of America Bulletin 60:1517-1526.

Turner, F.J.
1894 The significance of the frontier in American history. Annual Report of the American Historical Association, 1893, pp. 199-227. Washington, D.C.

Wallis, J.C.
1976 Evidence of climatic change from fluvial geomorphology and alluvial soils of the Colorado River, Texas. Unpublished M.A. thesis, Geography Department, University of Texas, Austin.

Wedel, W.R.

1943 Archaeological investigations in Platte and Clay counties, Missouri. Smithsonian Institution, United States National Museum Bulletin 183 GPO, Washington.

1959 An introduction to Kansas archaeology. Bureau of American Ethnology, Bulletin 174. Washington D.C.

1964 The Great Plains. In Prehistoric man in the New World, edited by J.D. Jennings and Edward Norbeck, pp. 193-200.

1978 The prehistoric Plains. In Ancient Native Americans, edited by J.D. Jennings, pp. 183-220. Fremarr, Cooper & Co., San Francisco.

Wendorf, F.

1978 The Fort Burgwin Conference on national archaeological policies. Office of Archaeology and Historic Preservation, Department of the Interior. Washington, D.C.

Williston, S.W.

1902 An arrowhead found with bones of Bison occidentalis Lucas in western Kansas. American Geologist 30:313-315.

1905 On the occurrence of an arrowhead with bones of an extinct bison. Proceedings of the International Congress of Americanists, 13th Session, pp. 335-337.

Wilmeth, R.

1970 Excavations in the Pomona Reservoir, Kansas State Historical Society Anthropological Series No. 5.

Witty, T.A. Jr.

1967 The Pomona focus. Kansas Anthropological Association Newsletter 12(9):1-5.

1978 Along the southern edge: the Central Plains Tradition in Kansas. In The Central Plains Tradition: internal development and external relationships, edited by D.J. Blakeslee. Office of the State Archaeologist, University of Iowa Report 11:56-66.

1981 The Pomona focus, known and unknown. The Missouri Archaeologist 42.

Wood, W.R. and R.B. McMillan (editors)

1976 Prehistoric man and his environment: a case study in the Ozark Highlands. Academic Press, New York.

Wood, W.R. and R.E. Pangborn

1971 An archaeological survey of the Butler, Freeman and Nevada reservoirs, western Missouri: 1969. Report submitted to the National Park Service.

Working Group on the Origin and Nature of Paleosols
1971 Criteria for the recognition and classification of paleosols.
In Paleopedology: origin, nature and dating of paleosols,
edited by D.H. Yaalon. International Society of Soil Science
and Israel University Press, Jerusalem.

APPENDIX I : GLOSSARY OF TECHNICAL TERMS

archaeology - a series of techniques or methodology designed to reconstruct past culture.

arrowhead - a small projectile point often less than an inch in length used to tip an arrowshaft.

artifacts - a general term for tools, weapons, utensils and other items made by the hand of man.

assemblage - a group of artifacts seeming to belong to a single culture.

bifacial - deliberate alteration upon two opposite surfaces of a stone tool.

body sherd - fragment from the lower portion of a ceramic vessel.

component - reference to a short term archaeological deposit commonly thought to represent a single cultural group.

cord marking - a pottery decoration produced by pressing the vessel surface with a cord-wrapped tool when the clay is still plastic or malleable.

Cultural Resources Management - knowledgeable investigation, preservation and public dissemination of information relating to prehistoric and historic artifacts, habitations and archaeological sites.

culture - the lifeways of a particular people, including the habits, customs, and artifacts associated with gaining their living, organizing their social and political activities, and practicing their religious rituals and ceremonies.

diagnostic artifact - material remnant of an historic or prehistoric technology that provides a temporal and cultural association, which has been determined by previous scientific investigations.

fluted - term which refers to a stone tool manufacturing technique associated with the Paleo-Indian period and consists of relatively long parallel sided scars on tool surfaces.

focus - an archaeological cultural unit possessing traits sufficiently distinct or characteristic to distinguish it from all other units of a locality or region.

grab sample - a sample of artifacts recovered from the general provenience of the site rather than individually mapped or collected by grid quadrants.

grit tempering - crushed particles of rock such as limestone, chert, or granite which are added intentionally to pottery clay. The

grit tempering is supposed to keep the pottery vessel from breaking when it is fired.

ground stone - term referring to method of stone tool manufacture consisting of grinding and polishing in order to produce the desired shape.

haft element - the portion of a tool exhibiting some facility, e.g., notching, constriction, and/or grinding, differentiating it from the working portion of a tool and allowing it to be fastened to a handle or shaft.

in situ - term referring to an intact position of an artifact within the matrix in which it was originally deposited.

mano - a hand stone that has been shaped for use as a grinding or mealing stone in connection with a metate. It is used for crushing and grinding seeds.

metate - a flat stone upon which seeds and other foods are mashed and ground. A hand stone or mano is used with it.

National Register of Historic Places - official list of the Nation's cultural resources worthy of preservation.

point - a bifacially flaked, bilaterally symmetrical chipped stone artifact exhibiting a point of juncture on one end and some facility for hafting on the opposite end.

postmold - the evidence in the ground of a house post or any wooden post after the wood has rotted away. It is identifiable by the darker color in the soil.

potsherd - a piece of a broken pottery vessel.

protohistoric - the time immediately preceding the beginning of written history in an area. Quite often European trade goods occur on protohistoric sites, since trade items found their way to the Indians before there was any written history concerning them.

radiocarbon dating - a method of obtaining the date of bone, shell, or vegetable items by measuring the amount of radio-activity of carbon 14 in them.

sedimentation - the natural process of soil accumulation derived from alluvial (riverline) or colluvial (mass earth movement) processes.

shell tempering - small pieces of crushed shell added to the clay before making pottery.

sinuosity - geomorphological measure of the degree of meandering of a stream.

strata - natural or cultural layers in the soil or archaeological sites produced by the accumulation of soil and/or refuse deposits.

structural and lithological control - geological term reflecting composition and movement of bedrock.

tempering - any substance such as crushed shell, crushed grit or sand added to pottery clay in order to prevent cracking when the vessel is fired.

testing - a scientific technique of investigating archaeological sites consisting of physical excavation of portions of a cultural or natural deposit and permanent recording of the results.

trait (cultural) - a single element or item that is considered to be part of a particular culture. It may be an artifact, house structure, pit, or any smallest unit of a cultural manifestation.

transverse fracture - a break in an artifact, parallel or approximately parallel to the base.

unifacial - deliberate alteration on one surface or edge of a stone tool.